NOVEMBER, 1952

WOOD and wood products

THE NATIONAL MANAGEMENT AND PRODUCTION MAGAZINE
OF THE $9 BILLION FOREST PRODUCTS INDUSTRY

Richard G. Kimbell

See Page 23—WOOD SALUTES

Sawing Profits
Former weed trees go to market in smart lodgepole pine operation. See page 26.

Adhesives
For practical answers on gluing problems in the shop see page 29.

Management
How production management can help cut your costs. Page 38.

Education
Practical means to train sawfilers is explained in detail on page 25.

Other Items to See

- Marine Laminating
- Casting Resins
- White Pine Plywood
- Imported Hardwoods
- News and Trends
- Out in the Shop
- Markets
- New Products
- New Literature
- Woodictionaries

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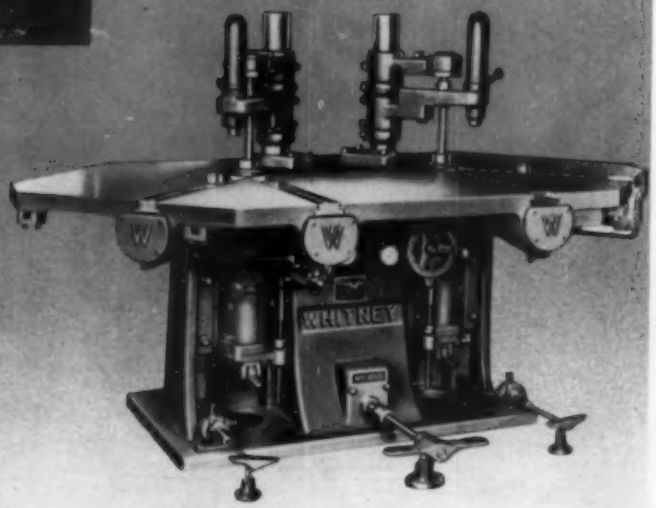

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WOOD and wood products

Volume 57, No. 11

NOVEMBER, 1952

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(advertisement)

Mauk Talk

Remember, in the good old U.S.A. if you don't like what pops out of the ballot box this month you can change it four years from now — and that's one of the things Thanksgiving is all about.

• • •

Cutie: 'I'd like to buy a brassiere."
Clerk: "What bust?"
Cutie: "Why, nothin'. The old one just wore out."

• • •

Yonkers, New York has a law against gals wearing shorts on the streets. They could take 'em off, I suppose.

• • •

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Simple Celia says she was never x-rayed but she's been ultraviolated several times.

• • •

Gorgeous: "Can you vaccinate me where it won't show?"
Doctor: "That'll be ten dollars, in advance."
Gorgeous: "Why in advance?"
Doctor: "Because in cases like this I often weaken and don't charge anything."

• • •

Notice in a church bulletin: "The Young Mothers' Club meets every Wednesday afternoon. Any young woman in the parish who would like to become a Young Mother should call on the pastor in the rectory after services."

• • •

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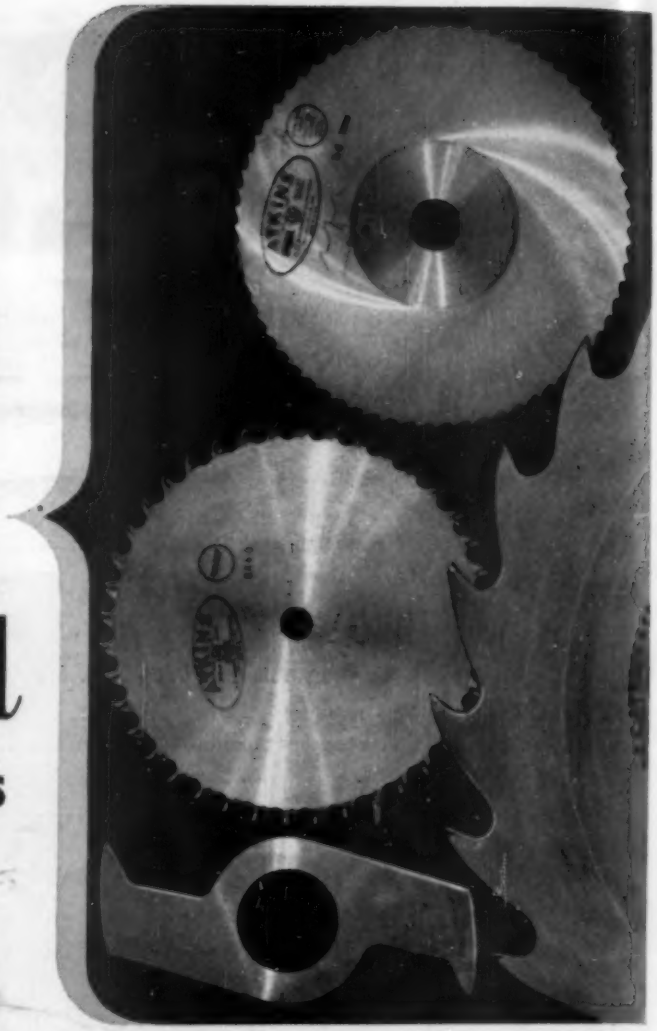

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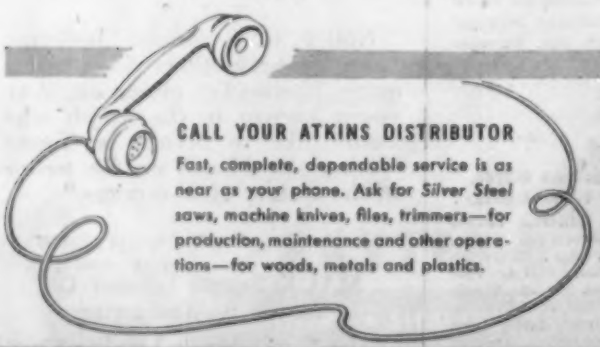

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NOVEMBER 1952

WOOD and wood products

VOL. 57, NO. 11

Industry News and Trends

Lumber

Shipments Lead Production: Lumber shipments of 471 mills reporting to the National Lumber Manufacturers Association were 2.8 percent above production for the week ending September 27, 1952. In the same week new orders of these mills were 5.0 percent above production. Unfilled orders of the reporting mills amounted to 39 percent of stocks. For the reporting softwood mills, unfilled orders were equivalent to 21 days' production at the current rate, and gross stocks were equivalent to 51 days' production.

For the year-to-date, shipments of reporting identical mills were 4.7 percent above production; orders were 3.3 percent above production.

Western Pine: The demand for Western Pine during the third quarter of this year was decidedly better than was anticipated at the beginning of the quarter. Preliminary estimates indicate shipments of 1,940 million feet, or 5 percent above third quarter of 1951, according to the Western Pine Association.

The favorable comparison for the third quarter was partly due to the slump in shipments during the third quarter of last year. Normally the region ships around 200 million feet more in the third quarter than in the second. Last year it shipped 91 million feet less.

Southern Pine: Shipments of Southern Pine by the 94 mills reporting to the Southern Pine Association for the week ending September 27, 1952 amounted to 16,853,000 feet. Orders for the week totaled 14,994,000 feet.

Furniture

Wood is a Permanent Furniture Material: Wood is too deeply rooted in the American tradition to be seriously displaced by any other basic material for furniture in this country, according to Nelson C. Brown, professor of forest utilization, New York State College of Forestry, Syracuse University.

First Glued Laminated Ship Launched

First ship launched under the program described in the October (page 24) and current (page 32) WOOD AND WOOD PRODUCTS, minesweeper No. 422 slips down the ways of the Luders Construction Co. at Stamford, Conn.

Today the furniture business is a two billion dollar industry. Hardwoods constitute about 80 percent and softwoods about 20 percent of the total volume of wood used.

The great bulk of wood needed for furniture will continue to come from native American forests, according to Professor Brown, although we will probably use more and more tropical woods. Mahogany, walnut, cherry, birch, and maple will continue as standards of quality and price. But just as we have begun to use obeche, cativa, gaboon or okume, satinwood, prima vera and many other woods, we will probably discover and appreciate the advantages of woods not presently used or perhaps little known, irrespective of their origin. A larger proportion of softwoods will be used, also more veneers and plywood.

Furniture Packaging: The loss in the furniture industry in 1951 because of poor packaging reached 7¾-million dollars damage, including salvage, out of the 100 million dollar total loss damage paid out by the U.S. railroads. No estimate has been made of the additional loss suffered in the increased use of trucks in shipping

furniture. The increased use of fibreboard package against wood crating, changes in furniture design, lack of a common study of the problem by changes in furniture design, lack of poor control and lack of inspection of packaging on basic packing premises of the furniture manufacturer are all making their contributions toward this loss.

Markets

Veneer: August shipments were the largest since March, 1951. Output for the month—only 80% of the stock was shipped. Current demand and low production has found markets for both face and cross-band veneers. Face veneer and commercial veneer price decontrol is in process.

Furniture: Retailers stocks are dropping but still buying conservatively. The sales of manufacturers shows no signs of diminishing. Decontrol of furniture prices is still pending. The plan is being resubmitted for the Decontrol Committee's approval.

Home Building: Current annual adjusted rate indicates 1,035,000 dwellings will be started by the end of 1952. Regulation X, or Federal Credit Controls, can be reestablished any time house building activity, over a period of three consecutive months, equals or exceeds annually the adjusted rate of 1.2 million units per year.

TV Situation: A TV set shortage, in spite of increased production, is now appearing due to increased demand for sets. There is a producers parts shortage and new markets are opening as a result of FCC approval of new stations.

Hardwoods: At a recent Boston meeting of NHLA members were told that hardwood lumber prices are on an upward swing. Current increased demand indicates that 1953 business will be much better than in 1952. Inventories are normal with ample stocks to take care of demand.

Plywood: Douglas fir plywood production, sales and shipments are now at levels slightly above comparable to 1951 figures. Hardwood plywood sales are increasing as a result of furniture pickup.

Forestry

Forest Lab for Philippines: A forest products laboratory, designed much like the one in Madison, Wisconsin, is to be built at Los Banos, Laguna, Republic of the Philippines. Research will be undertaken to find the best methods of processing native woods, bamboo, rattan, tennins and gums for manufactured products.

Winslow L. Gooch, MSA advisor to the government on forestry products, declares that the activities of the laboratory will include insect-fungus control, wood technology, timber testing, and the study of all other kinds of forest products. Philippine companies will be given the opportunity to study pressed board, veneers, plywood, and pulp and paper production.

Southern Reforestation: An all-time peak in southern reforestation is expected this fall and winter, with the tree-planting goal set at 303 million seedlings. 184 million trees were planted during the past season.

A forest planting survey conducted by the Southern Pine Association revealed that trees were planted on more than 40,000 acres of company lands. In addition, the lumber industry provided a million seedlings to farmers for planting.

The survey listed the 1952-53 estimates of the tree-planting program in the 12 southern states as follows: Alabama, 28,000,000; Arkansas, 25,-

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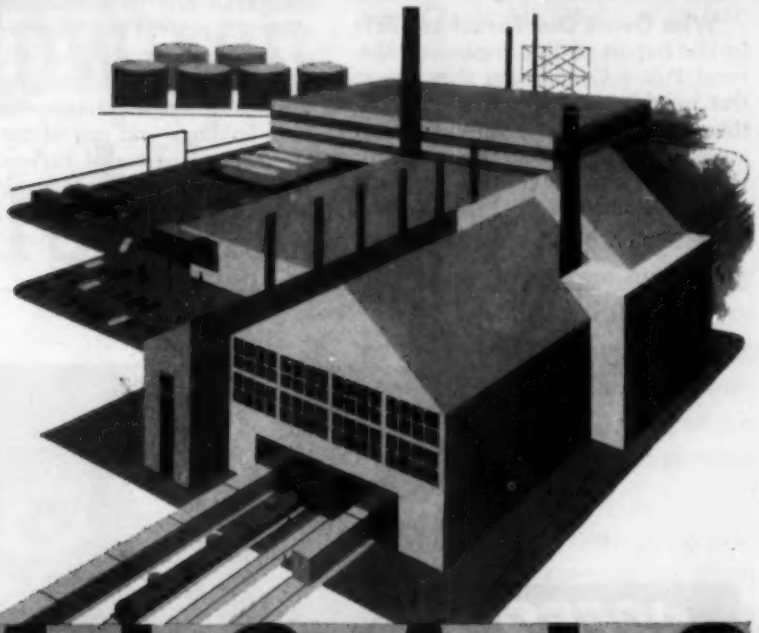

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000,000; Florida, 40,000,000; Georgia, 56,000,000; Louisiana, 47,000,000; Mississippi, 30,000,000; North Carolina, 13,000,000; Oklahoma, 6,000,000; South Carolina, 27,000,000; Tennessee, 5,000,000; Texas, 17,000,000, and Virginia, 9,000,000.

Who Owns Our Forest Lands?: In the Report of the President's Material Policy Commission they report that roughly one-quarter of the Continental United States or 460 million acres are suitable and available for producing commercially valuable crops of timber.

The publicly owned commercial forest land (116 million acres) is distributed as follows: National forests, 63 percent; other federally owned land, 14 percent; owned by State and local governments, 23 percent.

About three-quarters (344 million acres) is privately owned. Lumber companies and pulp companies hold about 12 percent of this private land or 41 million acres. About 40 percent or 138 million acres consists of wooded tracts on farms. The other farm holdings, and few of the owners are in the business of harvesting and processing timber products about 400 of the private forest ownerships contain 50,000 acres or more. About 3,000 are of medium size, between 5,000 and 50,000 acres. Holdings of less than 5,000 acres are classified as small, most of them less than 100 acres, many only a few acres. About 32 million small forest holdings are owned by farmers; a million by no farm owners.

Forest Fire Protection: Because of the increased effectiveness of forest protection in the United States, fire losses in 1951 were the lowest in history. The acreage burned was held to 10,780,622 acres, one-third less than in 1949, when the previous all time low in fire losses was recorded. Losses were reduced despite bad fire weather and increased use of forests by picnickers, tourists and sportsmen.

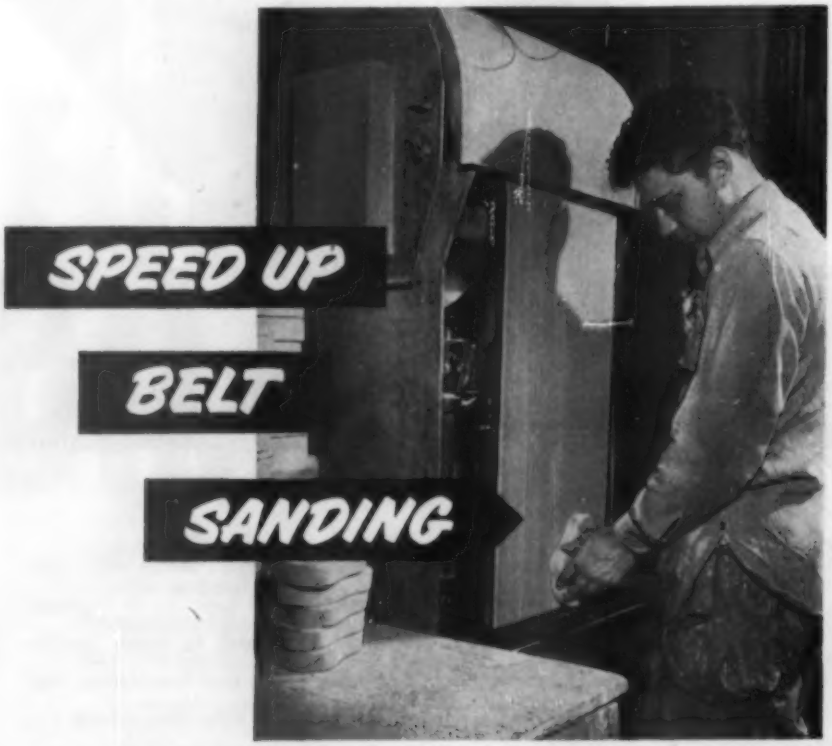
Fire occurance decreased too. Fire fighters battled 164,085 fires in 1951 and 208,394 in 1950. By the end of the year, 31 states were on record as having established full protection for all their forest lands. Only 9.9 percent of the total forest area in the United States is still without protection. These unprotected areas accounted for 67 percent of the 1951 fire loss and 35 percent of the fires.

Expanded use of radio communication and power equipment in the woods, and improvement in fire fighting techniques helped hold the losses to a minimum. The industry sponsored Keep America Green program, now operating in 33 states, kept the public informed of the fire danger and solicited their cooperation in preventing fires from getting a start.

Forest Management Defined: While there are other elements in forest management, levels of protection and cutting practices provide a good general index of the quality of management.

Growth rates and the quality of timber stands reflect the treatment given to the land. Forest management is a combination of interdependent practices. The first measure of management is protecting forests from fire, insects and disease epidemics. The individual owner can reduce fire hazards by proper disposal of logging slash, dead trees left standing, and other highly inflammable material; and can reduce vulnerability to pests by keeping stands in thriving condition. But effective control of fire and pest outbreaks is possible only through better state-wide and nation-wide programs.

The second measure of forest management is the quality of cutting practices. These range all the way from leaving a few seed trees per acre to intensive silviculture which may involve frequent partial cuttings of



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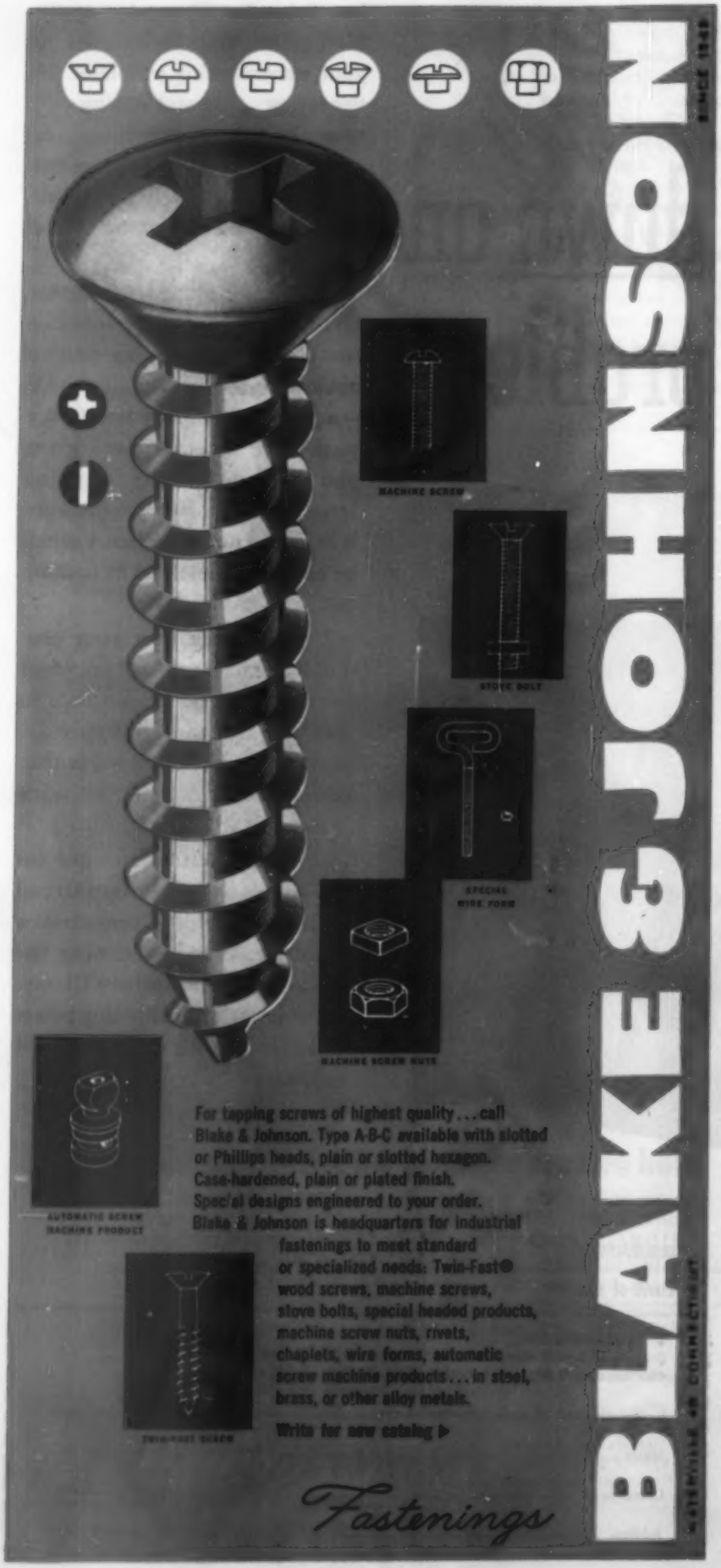
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merchantable trees, thinning of non-merchantable material, planting of areas not fully stocked by natural regeneration and other operations.

Utilization

From Cedar Waste to Playhouses: The increasing interest in research into the possibilities of utilization of wood waste is revealed in the rustic playhouses for children now being produced by the Sagola Wood Products Co., Sagola, Mich.

These playhouses are produced from cedar slab waste obtained from a nearby railway tie mill.

Research

Oak Wilt Data Available: The three-year program to control the spread of oak wilt has entered its second phase with the appropriation of $51,000 to five mid-western colleges and universities and to the Ohio and West Virginia State Agricultural Experiment Stations. The National Oak Wilt Research Committee advises that the Battelle Institute, Columbus, Ohio, has made improved research techniques available to scientists throughout the country engaged in the fight against the fungus.

Thousands of acorns have been gathered in Louisiana and sent to Battelle for use in the experiments. The institute has also developed an improved method of inoculation that infects red oak seedlings with the fungus within two days. The techniques are being developed in the institute's greenhouse laboratories under the sponsorship of D. B. Frampton & Co., Columbus, Ohio.

Spraying Spruce Budworm: Research into the reduction of spruce budworm caterpillars on 270,000 acres of forest sprayed in Oregon and Washington this year has proven 98 percent effective, according to foresters who conducted the program.

It is estimated that 350 million dollars worth of timber was saved by the spraying, at a cost of only $1 to $1.25 an acre. Serious fire hazards were also said to be eliminated by the spraying.

Forest Soil Depletion: Forest soils are not being depleted in spite of the tons of timber harvested, according to Dr. Chester T. Youngberg, forest soils expert, after completing a research project for the Weyerhaeuser Timber Co., Tacoma, Wash.

Youngberg has assembled facts and figures refuting the popular misconception that removal of tons of wood in the form of logs results in heavy

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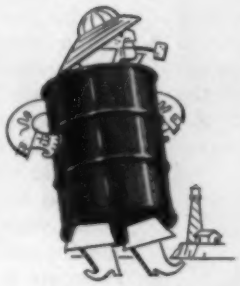

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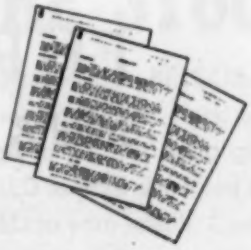

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depletion of the nutrient value of forest soil.

An average acre of Douglas fir forest land may yield 400 tons of wood at the time of harvest; but only a small portion, actually less than one per cent by weight, is made up of soil nutrients—nitrogen and other inorganic compounds—according to Youngberg.

During the 80 or 100 years required to produce a log crop, this depletion is more than replaced by the weathering of minerals in the soil and the addition of nitrogen by rainfall and the action of nitrogen-fixing organisms in the soil.

President's Report

(The following is an additional item from the President's Material Policy Commission Report on lumber and wood products.—Editor)

Flooring: While there is a distinct trend toward the use of organic resilient floor covering which may be supported by plywood, hardboard, or pressed wood sheets because of the relative costs compared with fine wood flooring, wood will continue in demand for middle- to high-priced residential construction. Thus, it is expected that wood flooring will by no means disappear during the next 25 years but will probably hold a considerable share of the flooring market.

Since the desire for fine wooden flooring in residential construction is based on traditional and artistic appeal, the recently developed resin laminated floor tiling with thin veneers of fine, expensive woods, possibly resin impregnated and finished, may be expected to find architectural uses in houses which otherwise would use standard hardwood flooring.

On-grade flooring as in houses without basements is almost exclusively concrete faced with linoleum, asphalt, or plastic tile.

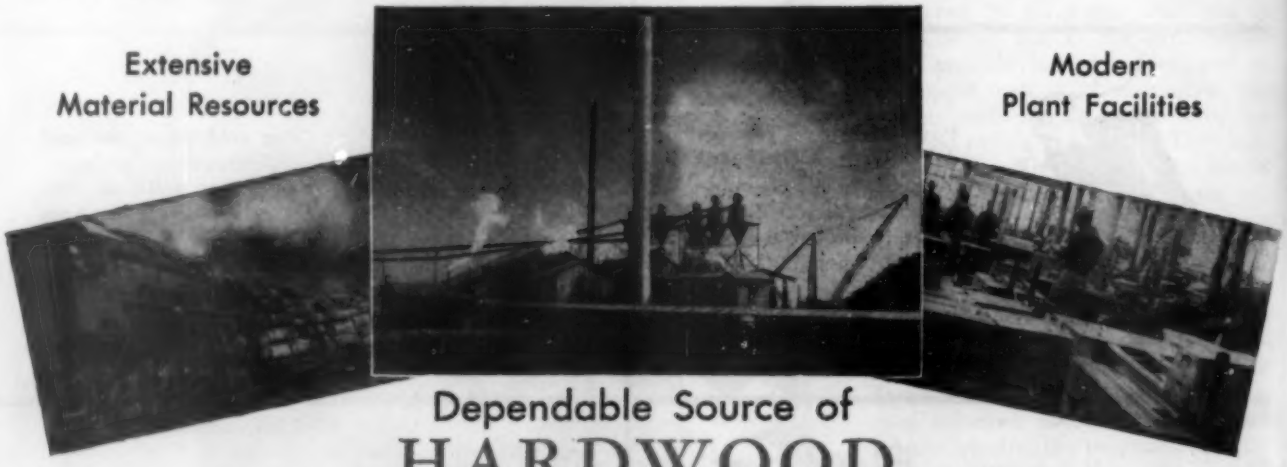
Wood has had little application in recent years in commercial, institutional, and educational structures. These are to a large degree based on resilient floor covering laid on concrete or the equivalent. It is not expected that this picture will change except with regard to the nature of the resilient coverings, discussed elsewhere.

Industrial flooring ranges from stabilized earth to special wood block products and includes concrete, magnesite, rolled asphalt, sand, crushed stone, steel grating, and so on. The kind of flooring installed in an industrial structure is based on functionality together with ultimate cost. For such structures as machine shops and heavy metal fabrication, treated wood block flooring has received a good rating and appears to be increasingly popular. Ease of replacement of worn or damaged areas is an important maintenance consideration that favors such flooring.

Miscellaneous

Forest Products Tax Yield Drops: The forest products tax for the fiscal year 1951-52 according to the records as kept by the Virginia Department of Taxation, at Richmond, totals $118,297.18. This represents a drop in revenue of $5,385.21 from the previous year's high mark of $123,682.39.

This forest products tax, which is collected from approximately 1,400 manufacturers of lumber, veneer, pulpwood, poles, cross ties, keg staves, and other forest products, is a special tax that is assessed on those industries over and above their regular tax load. Funds so collected, less collection charges, are turned over directly to the Virginia Forest Service to augment that agency's program of protection, management, and reforestation.



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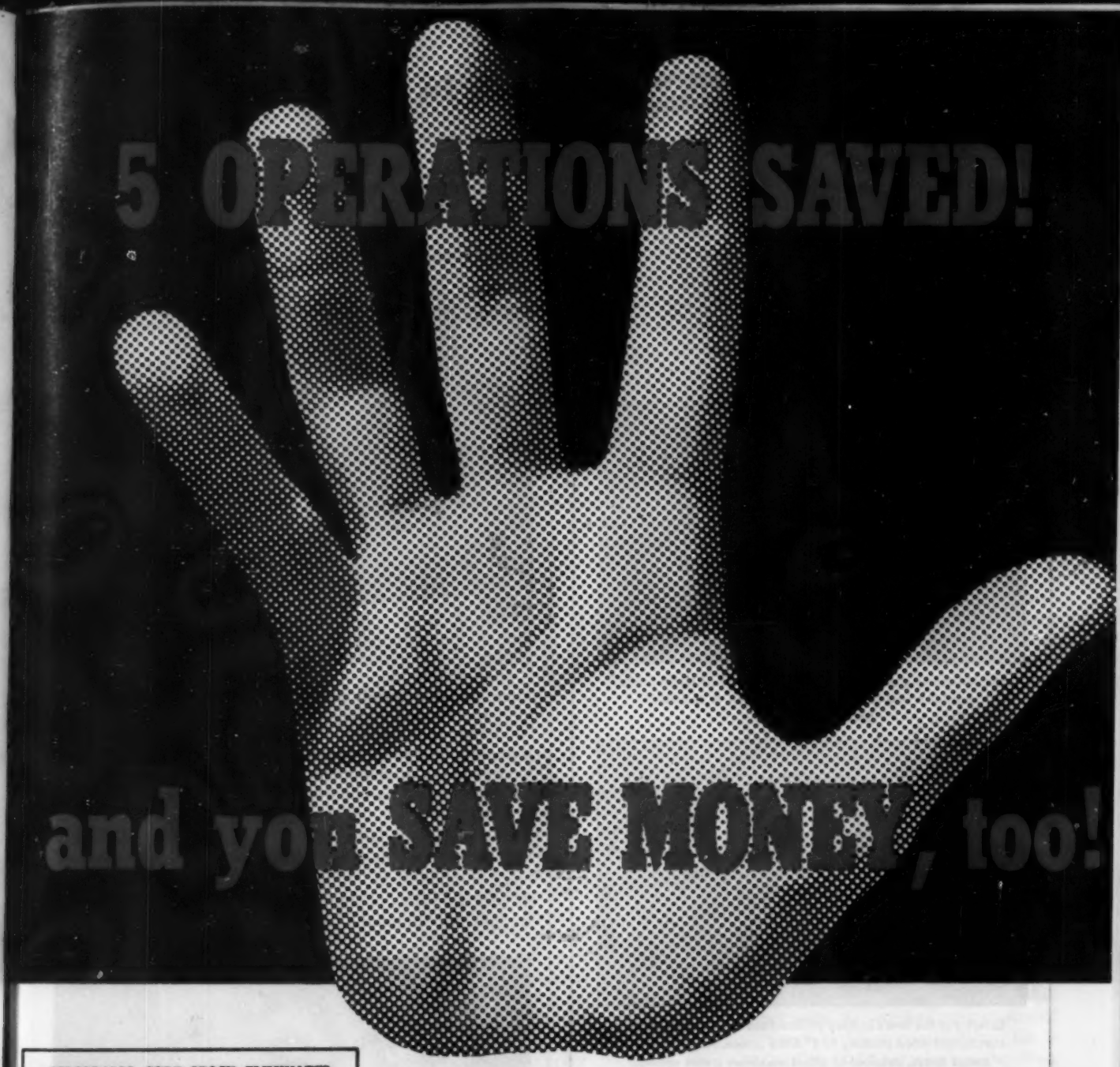

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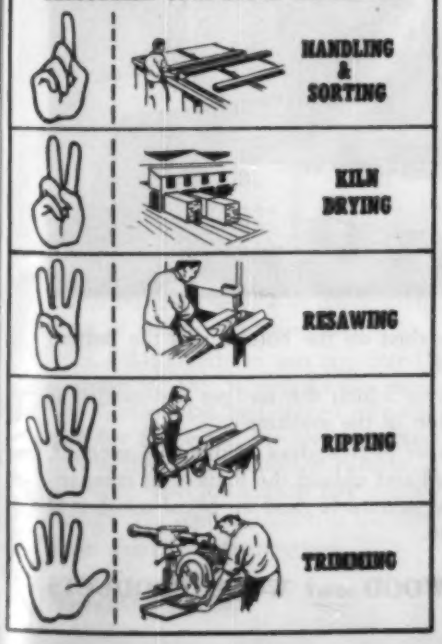

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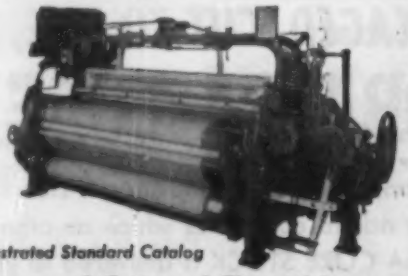

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Out in the Shop

Wood and Wood Products will pay $5.00 for each published Out in the Shop item submitted by readers. Items must be practical—helping to do a job better and easier. Clear photo and short explanation necessary. The Editors.

How to hold small pieces for sanding

The use of a special holding fixture with a coated abrasive belt doubled the rate of finishing paper-roll-holding wedges in the machine room at Behr-Manning Corp., Troy, New York. And machine operator fatigue was cut nearly in half.

The fixture is a wooden 2 x 4, notched to accommodate five wedges, and fitted with a curved handle for operators' comfort and safety. From the long side of each notch project the points of two wood screws. To these points the wedges are hammered and held temporarily for sanding.

The wedges are smoothed on the bottom and the bottom edges are rounded off.

The flat section over which the wedges are sanded is backed up by a platen in the machine.

Time to sand one set of 5 wedges is about 35 seconds, including time to load and unload the fixture. In comparison, it takes over one minute to sand an equal number of wedges one at a time.

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"Outstanding forestry leader.."

"Publicizes logging ....."

"Building code expert....."

Wood Salutes

With this issue, we are saluting three more top rank executives, each of whom is contributing his expert knowledge and experience in an important department of the forest products industry.

R. B. Goodman

Robert B. Goodman is nationally known in the lumber industry for his long-time interest in modern forestry methods. Goodman Lumber Co., Goodman, Wisc., of which he is president and founder, adopted a selective cutting system back in 1927. The company's forests are now operated on a sustained yield basis.

Goodman served as a director of the National Lumber Manufacturers Assn. from 1915 to 1942 and has been an honorary director since that time. He was a vice-president of NLMA from 1916 to 1919 and contributed many constructive ideas to the group while serving as chairman of various committees from 1920 to 1940.

Goodman also served as a director of the Northern Hemlock and Hardwood Manufacturers Assn. for many years.

In 1948 Goodman was appointed an honorary life member of the American Forestry Assn. "in recognition of his outstanding service in the development of forestry in this nation."

In 1931, Goodman was appointed a member of the Wisconsin Conservation Commission and served as chairman for five years. He took an active part in the writing and the passage of the Wisconsin forest crop law and assisted in the reorganization of the state forest fire prevention system.

Stewart Holbrook

Vermont logger Stewart Holbrook found his native heath too tame after a first sergeant's stint in France in World War I. The west beckoned, a west in the form of a logging camp deep in wilderness Vancouver Island, manned by Chinese.

For thirty years this amazing man of American letters has roamed the "far corner" of his country. He viewed the western logging and lumber scene with keen delight, often with profit, generally with an understanding and warm admiration for most of the people he has met.

He is said to be the only non-college man and logger ever to lecture at Harvard University. He is one of the nation's most outstanding historians. A tireless debunker of history writers' unfactual legends, he has strayed from the conventional historian's groove and written books full of amazing people who, Holbrook believes, deserve a place in our histories.

Holbrook is perhaps the nation's top logger historian and protagonist. After a few years in and around Boston in the late 1930's, Holbrook was called back west to head up the Keep Washington Green movement, which he helped build into a national conservation and fire-prevention program. During those years he wrote, "Murder Out Yonder" and "Burning an Empire" and innumerable magazine articles.

R. G. Kimbell

Richard Guy Kimbell, known to his host of friends as just plain Dick, is the recognized dean of building code men in the lumber and forest industries and one of the foremost authorities in the country in this highly technical field of law.

Now in his thirty-third year with the National Lumber Manufacturers Association, he has done meritorious work in timber engineering and timber mechanics as applied to structural design and home construction. He is the author of 22 technical publications and has had patents granted in the United States and foreign countries. He is Director of Technical Services, National Lumber Manufacturers Association, Washington, D. C. and Vice-President of the Timber Engineering Company.

Born on a farm in Livingston County, Illinois, October 21, 1894, he received his education and early training in nearby Saunemin and Chicago, where he later worked in the construction and architectural fields. After serving in World War I, he joined NLMA in Chicago in the fall of 1919.

Mr. and Mrs. Kimbell have one son, Richard G. Kimbell, Jr., who, after graduation from V.P.I. and Yale, was a member of the faculty of the Yale School of Engineering for two years and is now with the National Advisory Committee for Aeronautics.

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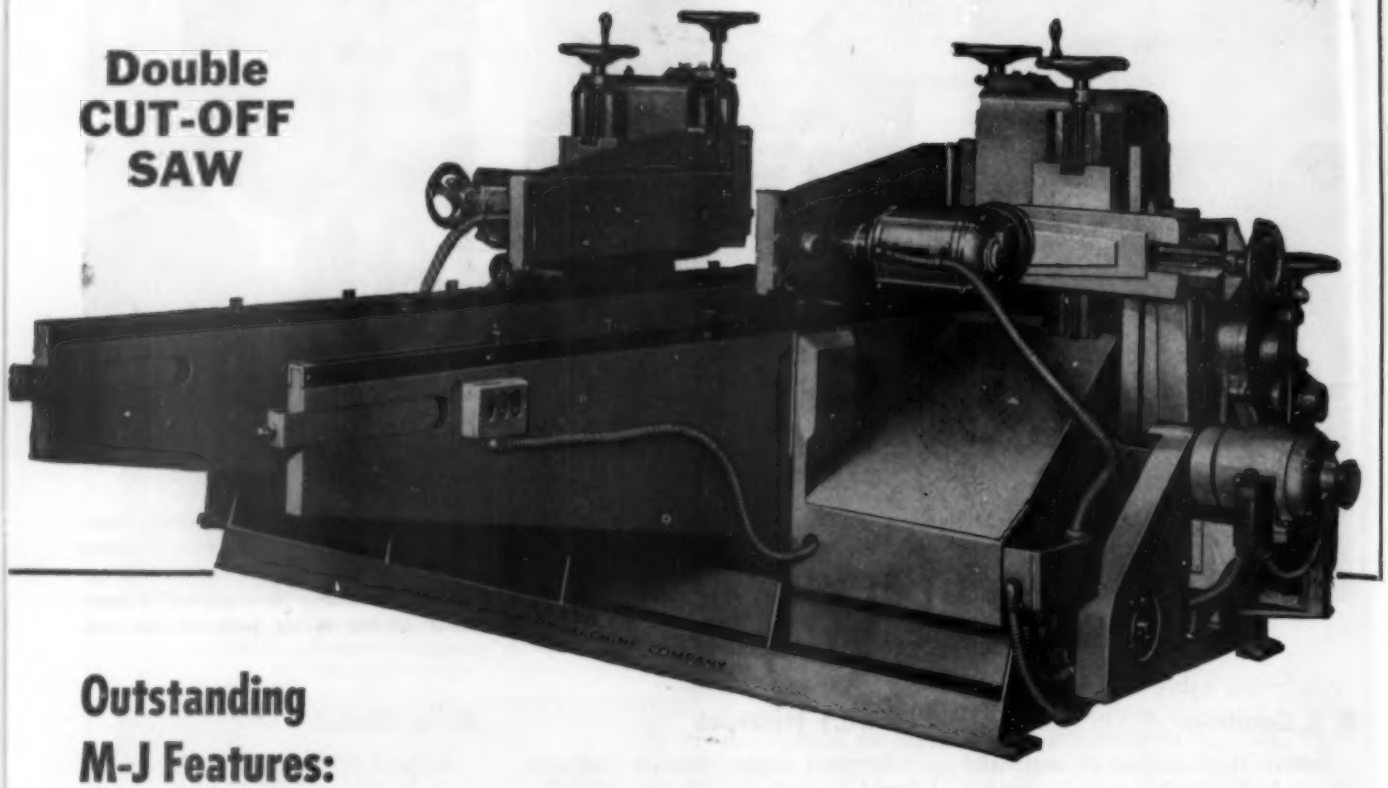

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SAW SHARPENING is taught.

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How to Train Saw Filers

Quebec school uses actual job as well as school room training to turn out top-flight workers. U. S. Wood Industries can profit.

The Sawmill School of Duchesnay is located at Duchesnay, Portneuf County. This hamlet, lying at the foot of the Laurentian Mountains and adjacent to Lake St. Joseph, is the seat of many of the forestry activities of the Province of Quebec. Besides the Sawmill School, there are the entomological and forest products laboratories, ranger school, meteorological station and a fire protection school. The training given in these schools is implemented by a modern sawmill and a forest of more than 8,000 acres for field work and research.

The Sawmill School, under the capable direction of Maurice Gerin, F. E., was founded in 1946 for the purpose of training personnel in one or more of the operational phases of a sawmill. Intensive and practical courses are given for log scalers, sawyers, sawfilers, lumber graders, kiln drying experts, wood products and by-products and millwrights. The training in each course is divided into three parts, general, technical and practical.

The sawfilers course, directed by Claude Proulx, is an intensive one in the technical understanding, care and maintenance of saws. In addition, the student is taught many other subjects in order that he may have a thorough understanding of his job, its importance, and the raw material, machinery and operations that are a part of his job. The minimum sawfilers course takes four and one half months. Six days each week the student spends four hours in the classroom. Four additional hours are spent in the well laid out filing room equipped with the latest Hanchett filing machinery, five days each week. The room is operated under actual working conditions as the filing room of the schools' modern sawmill produces both hardwoods and softwoods for the market.

SCHOOL SAWMILL offers chance for actual work.

A brief summary of the numerous subject matters covered in this intensive Sawfilers course clearly shows the broad knowledge required of a sawfiler and the advantages of a well planned intensive training course to develop a competent craftsman.

Technical: Wood cutting and sawing, applied mechanics, sawmill machinery and tools, assembling and overhauling of machinery, welding, electricity, and job safety training.

Introduction to Sawfiling: Importance of care and maintenance of

(Continued on page 48)

In the July 1951 News and Trends we brought to the attention of the industry the need for the establishment of training schools for Sawfilers and Knife Grinders. The average age of these craftsmen in the United States is well over sixty years. Unfortunately, a mere handful of trained men are coming along to take their places. Last month, Paul Graham in his article, "Better Trained Men—How To Get Them", Pointed out again the seriousness of the situation and the need for immediate action in establishing training schools for these craftsmen. A practical answer to this problem is found in the Sawfilers course, at The Sawmill School of Duchesnay in the Province of Quebec.

ONE-MAN CHAIN SAWS are key cost cutting equipment that help make lodgepole operation economical.

27" LODGEPOLE PINE for burial-box stock was glued up from nine narrow boards.

Smart Lodge Pole Pine Operation Pays Off

Profits from former "weed" trees are result of progressive management program. Standard equipment is adapted to do job. Unique "merry-go-round" arrangement in mill cuts costs.

Bob Forbes

Much ingenuity is required on the part of all concerned in the utilization of a so-called "weed" species of tree to make it pay off. Biles-Coleman Lumber Company, Omak, Wash., since 1948 has achieved the impossible by "discovering" thousands of acres of small lodgepole pine trees in its own backyard with a closely controlled logging operation, unique sawmill and efficient sales organization.

No step in the manufacture of glued-up lumber from lodgepole pines, maximum diameter of 14½ inches breast high, can be considered more important than other steps. So it is logical to follow the little logs to completion from the forest, mostly on the Colville Indian Reservation, Chelan National Forest and state of Washington sections.

This operation functions the year around, higher in the mountains during the summer.

The falling crew consists of two men equipped with chain saws who fell trees, trim them to a minimum top diameter of four inches, buck to multiples of 90 inches with a maximum of five such lengths per log, and trim limbs from three sides of trees. These men are paid by the tree and cut from 90 to 100 per day.

Logs are skidded to a landing with, of all things, a high wheel behind a diesel tractor. The high wheel is fabricated from steel, but in other respects it is a duplicate of the wooden ones used in skidding 50 years ago. Two choker setters attach a load of logs to the high wheel averaging nine logs.

At the landing, a wire rope is placed around the nine logs so that they can be handled as a package until they hit the log deck at the mill. Limbs are also trimmed from the remaining side of logs at the landing. Packages of logs are then stacked awaiting a single one of the Biles-Coleman fleet of 15 heavy trucks to haul them to the mill. A mobile, rubber-tired loader is used to stack packages and also load them on the truck.

Landing crew consists of three men including foreman of the entire woods operation.

The truck haul from landing to mill varies from 25 to 35 miles, both on and off a paved highway. The truck carries seven or eight sling loads of logs per trip, or approximately seven or eight cords.

When the truck arrives at the mill, it drives over a platform scale and to obtain the net load weight. Soon after the lodgepole mill was started four years ago, it was determined that its species averaged in weight 4,600 pounds per cord. Then, as other species began to come to the new mill, it was found that Douglas fir and western larch weighed the same and young ponderosa pine was far heavier at 5,200 pounds per cord.

The policy of weighing logs is more satisfactory than any other measure, since logs are of such small size. The Forest Service accepts weight as a basis for stumpage payment and the Indian Service is expected to do likewise before long, but at present these stumpage payments are by the tree.

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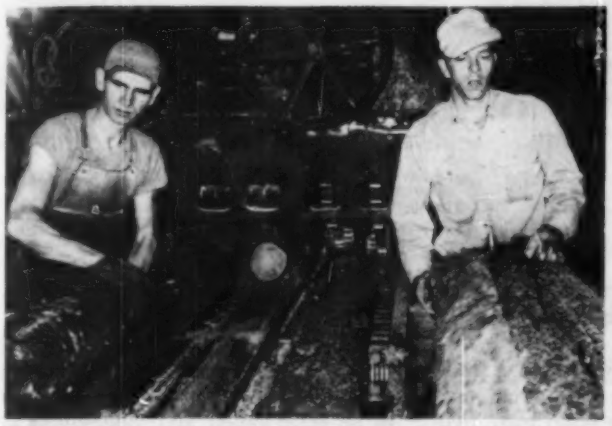
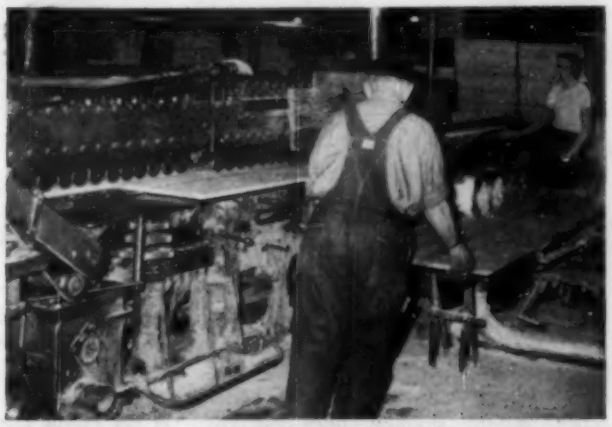
TYPICAL TRUCK-LOAD of lodgepole pine on way to mill. Standing lodgepole at the left.

SLING-LOAD of lodgepole lifted from truck load of standard logs.



HORIZONTAL BAND MILL with divided feed table is heart of "merry-go-round" operation.



AUTOMATIC GLUING MACHINE joins small boards by dove-tailing and edge-gluing.

This system of weighing also allows the lumber company to purchase loads of logs, in any quantity, from farm woodlot owners and others interested in cash crops of wood.

From platform scale, the lodgepole truck has its loads transferred to a log deck by a hoist moving between decks on rails. Trucks of the company's other logging operations also deposit small logs at the lodgepole pine deck. Utilization in the new mill has enabled not only the logging of smaller trees on regular logging shows, where desirable, but also cutting an extra log to a smaller top diameter.

Material from regular operations comes to the lodgepole mill in sling loads on top of trucks loaded with larger timber. Sling loads are merely unloaded at the lodgepole deck before trucks go to have their main loads taken care of.

Cutoff sawyer at the log deck removes wire rope from packages so logs fall on an endless chain and then tumble singly into a trough at his will. He also operates a 50-inch-diameter, swing-type circular saw which trims logs to 90-inch length, or a standard 7½-foot length plus two-inch trim allowance. Logs then move on a cross chain to the mill pond.

Lodgepole pine trees of the Okanogan highlands run to five standard lengths quite consistently.

At the start of lodgepole operations, in 1948, no log pond was provided, but during the first winter it was found that frozen logs did not saw satisfactorily. An all-cement hot pond 80 X 100 X 3-feet in size was therefore constructed and exhaust steam piped to it to maintain a temperature of 125 to 130 degrees during critical weather. The hot pond has eliminated the winter-time sawing difficulties.

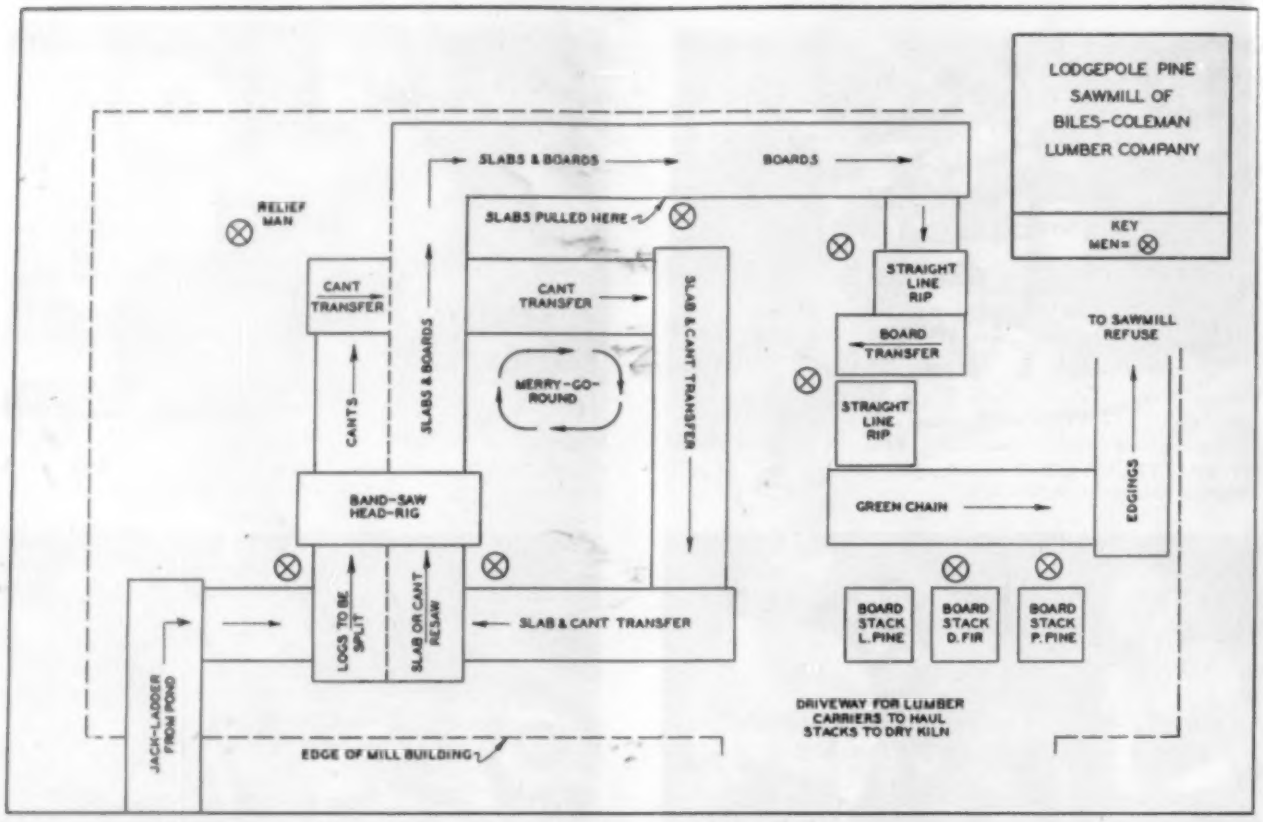
To see diagram of this modern plant turn page. Layout makes use of lodgepole pine feasible.

From the pond, logs move by jackladder into the mill and wait their turn at the headrig on a short deck. The headrig is in reality a six-foot horizontal band mill powered by a 150 h.p. engine, which was previously used as a resaw. It has a divided feed table on the left-hand, or pond, side of which logs are placed on a vertically adjustable platform. Thus each log is sawed approximately in half and then passes as two cants, by live-rolls and endless chain, to a transfer station where a workman places half-logs on another chain leading back to the right-hand side of the headrig.

All steam power in the lodgepole mill comes from the main, 200,000 bd. ft. per day Biles-Coleman sawmill of which, although otherwise independent, it occupies a corner.

At the second headrig station a man feeds half-log cants, flat side down on a stationary platform, into the band saw which then cuts a one-inch board from them. Slabs and boards then pass on to the transfer man who reroutes slabs on the circuit they have just been over and allows boards to pass on for further processing. This merry-go-round procedure continues for an individual slab as long as a two-inch wide board can be produced from it.

Unedged boards travel by cross



EFFICIENT SMALL MILL LAYOUT makes lodgepole pine pay out.

chain to two Diehl straight-line rip saws, one slightly removed from the other, where shadow lines permit trimming off of bark on alternate sides of boards. Straight-line rip saws, with traveling beds beneath and rolls above a board, were found to be more satisfactory than an edger, even if sides of boards are not parallel. The Biles-Coleman remanufacturing plant can use uneven widths in view of lodgepole pine's slight taper in 7½-foot-long boards.

Otto Brender, Biles-Coleman mill superintendent, claims, "We found that we could save three per cent more wood by ripping inside the bark line over regular edger performance." An edger at the lodgepole mill lasted only seven months.

Boards separated

Boards go from the rip saws to a green chain where species separations are made before completed piles of boards, by species, are taken by lumber carrier to the dry kilns. Trimmings of the rip saws also move down the green chain to a refuse conveyor at its end.

Boards of ponderosa pine, Douglas fir, white fir and larch were being produced as well as boards of lodgepole pine, which made up fully 75 percent of the volume.

Complement of men at the mill and log deck are: one hoisterman, one at the cutoff saw, one pond man, two at the headrig, one transfer man, one man at each of two rip saws, two men on the green chain and one floor man for relief of other workers. The lodgepole mill is under the supervision of John McNett.

The mill is near the peak of efficiently run operations. Logs move into and boards move out of it at the rate of 150 to 185 linear feet per minute, or 30 to 33,000 bd. ft. per eight-hour day. But the little lodgepole pine boards are not lumber until they have been dried and run through the Biles-Coleman remanufacturing plant, 100 yards from the lodgepole mill.

Here lodgepole pine manufacturing occupies only a small corner of the whole plant, which turns out fifty million board feet of lumber products per year. The small boards must be planed, joined, edge-glued and sometimes replaned before shipment. They are dove-tailed and glued together to make a piece of lumber as wide as 36 inches, the maximum width which the planers can handle.

Sander in the plant can accomodate lumber up to 48 inches wide.

Four edge-gluing and joining machines in the remanufacturing plant join lodgepole pine boards plus small boards of other species. These boards are routed on another merry-go-round to be edge-joined and edge-glued as many as ten times for the maximum width. Four rip saws beside the edge-gluing machines trim to exact width to fill a particular order.

Boards leave the lodgepole mill 33/32-inch thick and then are reduced to 27/32-inch before shipment as one-inch lumber by at least one planer operation.

A majority of lodgepole pine lumber is marketed as casket stock to be assembled into burial boxes, many of which are 87⅛ X 27 X ⅞ inches. These travel from Omak, in quantities of four or five carloads per week, piled in box cars holding 45 to 50,000 bd. ft.

Species used interchangeably

Lodgepole pine is also used interchangeably with other local species wherever it meets grade requirements.

Biles-Coleman Lumber Company lodgepole mill is all the more remarkable when one considers that it was conceived, planned and erected without a single engineer on the company payroll, according to company president Ross McNett. The two straight-line rip saws in the mill are also the only equipment not built up from whatever was at hand.

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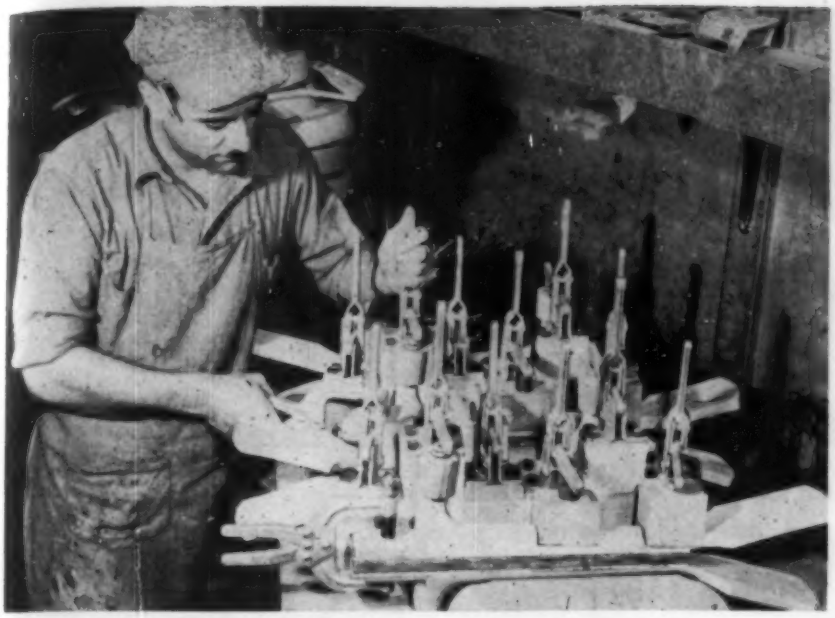


MODERN GLUING PROBLEMS require correct answers.

Practical Answers About Glue

Why glue is spread in ridges. Proper shape of grooves for different spreading jobs explained.

First of a series on practical glue problems in the shop, readers are urged to send in bothersome gluing problems for consideration in future articles. Problems of general interest will be answered as completely as possible. Where readers have answers other than those presented, please write, also. The Editors.

Tom Perry

Glue Spreaders

Q. 1. Why is glue spread in ridges, rather than as an over-all film?

A. 1. Theoretically there may be some arguments for all-over coatings, as is done with paints, varnishes, printers ink, etc. However, the practical aspect reveals that it is far easier to detect even and uniform spreading by glancing at the ridges, which should be continuous, of uniform size and even spacing. An experienced spreader crew will be quick to note broken ridges, or those that are too "lean", and the veneer can be respread immediately before laying up into plywood assemblies. It is always better to catch the trouble when it can be corrected, than to permit the possibility of poor glue joints that will inevitably be costly.

The color of most wood species as well as of most glues, is a light tan, and thin over-all spreads seldom mask the appearance of the wood grain. Hence it is hard to judge quickly whether the glue, spread in a continous film, is heavy or light, or may be missing entirely. The only way to be sure is to hold up the veneer so as to catch an angling glint of light. It would be wholly impractical for a spreader crew to be sure of the proper spreading of such film coatings.

Another indirect advantage is noted when inspecting a defective joint after tearing it apart. If the ridges can still be seen, the glue had been too thick to flow freely before the pressure was applied. Hence the ridges, originally, should contain enough glue to spread out over the intervening spaces, and the pressure should be applied while the glue is thin enough to be squeezed out uniformly.

Q. 2. What is the approved shape and spacing of grooves in spreader rolls for different types of glues?

A. 2. The original spreader rolls for animal glue were carpet covered and difficult to keep clean. The spreading gave a somewhat stippled effect to the film on the wood.

The first metal rollers on glue spreaders were cast iron with annular grooves of several shapes as shown in Fig 1. Grove A was intended for vegetable glues (cassava), B for casein, C for soybean, G for cassava and R for casein. These designs were based on spreading approximately 75 lbs of liquid glue mixture per 1,000 sq. ft. of single glue line. These were followed by steel rollers, usually of standard pipe sizes, and believed to have originated with the advent of soybean glues on the Pacific Coast. Several broad "V" shapes, with flat bottoms are shown in P and Q of Fig. 1. These were also designed to spread at the rate of 75 lbs of liquid glue per 1,000 sq. ft. of single glue line.

These metal rollers did not prove to be satisfactory for the resin adhesives, where spreading ratios were much lower, down to approximately 30 lbs. A semi-hard rubber was found to give the best service and could be grooved by abrasive wheels mounted on a screw cutting lathe. Grooves were thus spiral rather than annular. The approved shape of groove appears to be a 60° "V". Several groove contours, D, K, V and W, in Fig. 2, proved to be popular for the resin adhesives. These were designed to spread ratios around 40 lbs. For lighter spreads, similar shapes were in use, with 22 or 24 spiral grooves to the inch.

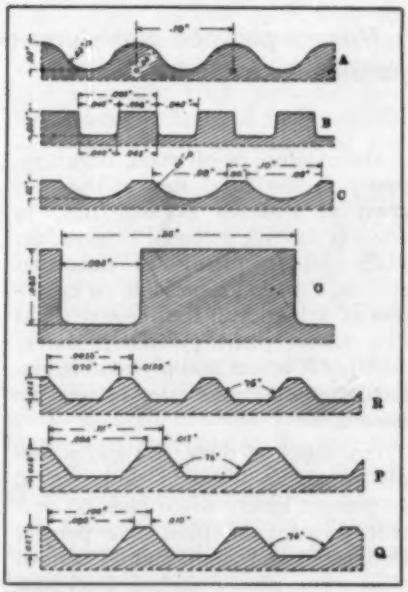
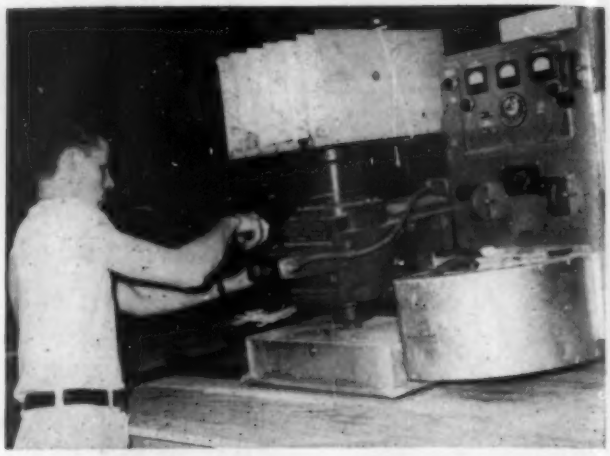


Figure 1.

A still later design, called by some a "buttressed" groove, is indicated in

(Continued on page 49)

HYDRAULIC-LIFT TABLE at glue spreader keeps work at most convenient level as pile of panels is built up.



"SLED PATCH" SETTER repairs defects. Operator applies glue to patch material—radios-frequency sets glue.

Plywood Plant Uses White Pine

Modern plywood plant turns out knotty pine panels. Clear panels also available.

Manufacture of plywood, begun recently, is the latest step in the program of Potlatch Forests, Inc., to develop the full potential of premium Idaho white pine and associated species. Plywood represents an expansion of activities in the three-year-old PFI veneer plant (WOOD; March, 1950). All veneer and plywood manufacturing machines are under the same roof.

Production of three, five and seven-ply panels of plywood projected at 10 percent knotty white pine, 55 percent ponderosa pine, five percent Douglas fir and larch, and 30 percent clear white pine. Standard-sized panels are four feet by eight feet.

In the three-ply plywood manufacturing process, glue spreaders coat both sides of the core stock simultaneously. Core strips are laid by hand on the edge-glued back panel. A face panel, also edge-glued, goes over the two layers of veneer with grains at right angles.

A number of panel units are built up on a hydraulic-lift table which keep work at a convenient height. Units of freshly glued plywood are separated every six inches by a red-bordered ¾-inch plywood caul board inserted to equalize pressure on the panels.

Soybean glue used in the primary process is prepared in a 175-gallon mixer. The patented glue contains powdered soy beans, pine oil, caustic soda, silicate of soda and Santophen, the last to prevent the formation of mold.

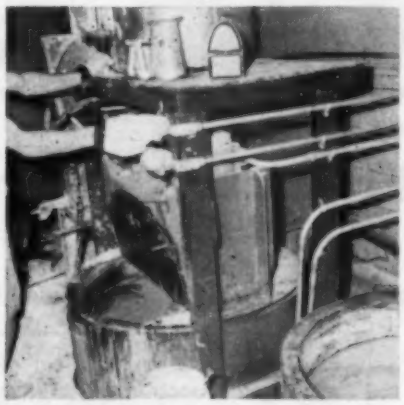
Twenty minutes pressure at 150-pounds per square inch is applied to each table load of plywood by a 54-inch by 104-inch press with a 72-inch opening. Stacked plywood panels are stored overnight before trimming.

Farther down the production line, panels are ripped to size by a skinner saw and an equalizer. Top and bottom plys of four-foot-wide panels are sanded.

Panels Patched

Machines to install "sled" patches wherever desired on nearly completed panels, as where splits or pitch pockets appear on the surface after sanding, are used to up grade panels. One of these machines gouges out the defect one ply deep. The other machine, a radio-frequency patch-setter, sets the manually placed "sled" patch in 10 seconds.

A relatively new technique, "sled" patching makes use of strips of veneer trimmed to several lengths from inch-long to foot-long, with both ends tapered in a vertical plane to resemble the cross-section of the front end of an actual sled. The patching machine operator spreads glue, places by hand on the gouged-out section of panel and trims the "sled" patch before setting. A patched panel is sanded smooth by a belt sander or small hand sander.



GLUE IS MIXED in mixer (center). Pipes and pump handle glue to storage (lower right) and to rollers.

VENEERED SURFACE of knotty pine plywood panel is made from ten edge glued pieces of veneer.

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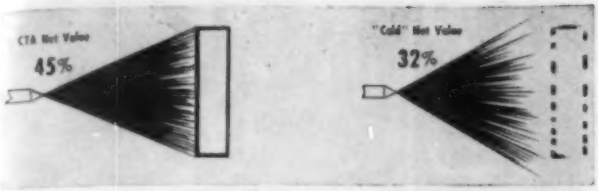
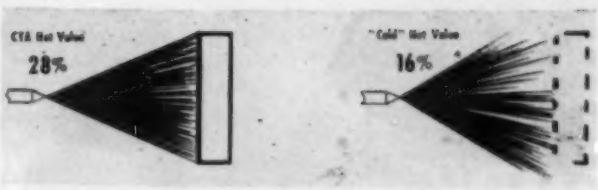


PIGMENTED MATERIALS	CTA AT GUN	COLD AT GUN
Solvent portion per gallon	50%	60%
Solids portion per gallon	50%	40%
Air pressure	45#	65#
Viscosity (4# Ford Cup)	18 sec.	75 sec.
Temperature of material	180°F.	variable



CLEAR FINISHES	CTA AT GUN	COLD AT GUN
Solvent portion per gallon	70%	80%
Solids portion per gallon	30%	20%
Air pressure	40#	55#
Viscosity (4# Ford Cup)	18 sec.	75 sec.
Temperature of material	160°F.	variable

How Controlled Temperature Application Works

Why right techniques and practices give better finishes. Also seventeen specific uses for hot spray application.

H. G. Beck

Atlas Powder Co.

Controlled Temperature Application, the process of applying preheated finishing materials, has rapidly advanced from a spray-room innovation to an economic necessity. In this process, heat is used instead of volatile thinners to lower the viscosity. Controlled Temperature Application of "hot spray" should always be evaluated on a production basis. The "casual" test should be avoided because it does not permit sufficient opportunity to make changes in initial solids, viscosity, air pressure and other variable factors. Adjustments are a part of testing new methods in the finishing room. The many benefits will repay the diligence and patience exercised in adapting "hot spray" to your individual requirements.

The best results are obtained from "hot spray" when the paint or finish used has been especially formulated for "hot spray". Some advantages may be obtained by pre-heating an ordinary "cold" paint but the most complete exploitation of "Hot Spray" will only be achieved by finishes formulated especially for application by this method.

Controlled Temperature Application reduces the loss of solvents and solids due to over-spray, evaporation and rubbing. These losses are substantial as is graphically illustrated in Figure 1. The data on the application of clear finishes shows that the average conventional material applied "cold" has 20% solids at the nozzle. All of the solvent—80%—is finally lost plus at least 20% of the net solids (20% of 20% solids = 4%). Summing up, a total of 84% (80% + 4%) of the original contents of a gallon of finishing material is lost. Now compare these figures with Controlled Temperature Application. The original solids are 30%—with a loss of 7%, or 2% of the total content of the gallon (7% of 30% = 2.1%) plus the 70% solvents, or a total loss of 72%.

The same analysis of the figures on pigmented material shows that the net value of a gallon of material applied by Constant Temperature Application is 45% as against 32% for conventional enamels. Two drums of pigmented material are required to produce the equivalent of one drum of final finish when applied by CTA as compared with the three drums of conventional pigmented material required by "cold" application.

Here are a few tips which may help you in getting full value from Controlled Temperature Application.

1. Avoid blisters, pin holes and trapped air in the final finish by removing dust particles embedded in the pores with a heavy blast of air. Be sure that the filler or surfacer is completely dry before applying the finisher by CTA. Solvent adjustment or a change in filler or surfacer may be necessary in some cases. An increase in temperature of the "Hot Spray" may be required in other cases.

2. CTA is formulated to permit application of more solids in one coat on upright services without sags. Do not "pile on" CTA formulated materials in wasteful amounts.

3. CTA produces a fuller coat, minimizes the rubbing time when rubbing is required. The best results will be obtained when extra drying time is allowed prior to rubbing CTA material.

4. Reduce "orange peel" by applying a wet, smooth film from a gun held at the proper distance from the work.

5. Do not use the same high air pressures normally maintained for "cold spray" application when using CTA materials. High pressures produce excessive fog and fumes which are wasteful and unpleasant to the worker.

6. Do not use CTA materials with stains, washcoat size coats, shading stains, toners and products with very low solids content because CTA offers no advantage over "cold" application with these materials.

7. When changing over from "cold" applications to CTA remember that the use of high air pressure, fast motions of the gun and holding the gun too far from the work may result in lack of bonding between coats.

8. Give the same careful attention to "hot spray" equipment that is given to other machinery.

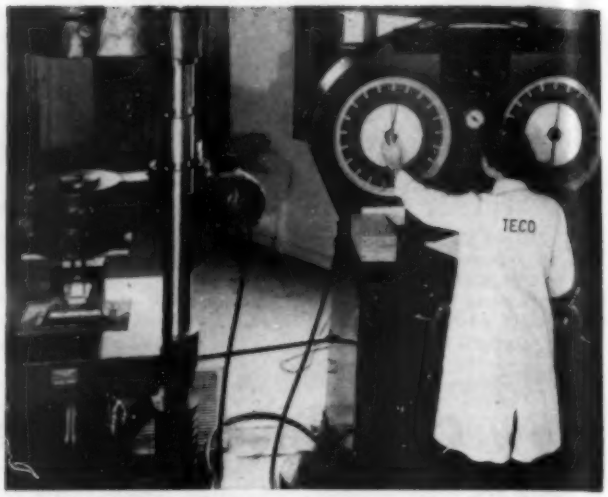
A few specific examples of the use of CTA in finishing wood surfaces are given below. These are all examples taken from actual production:

1. Flat or gloss wood lacquers used on a wide range of furniture and other wood. It has had outstanding success when surface was porous with considerable end grain, such as upholstered furniture. Greater fullness is obtained with one coat of CTA and sealer than with one of sealer and two coats of "cold" lacquer.

2. Bank Fixtures. Five operations including sealer and one coat CTA replaced ten operations including wash coat, sealer, and two of three coats of lacquer. Production was speeded

(Continued on page 56)

NEW MARKET THROUGH RESEARCH: prior to wood testing program other materials were used.



BLOCK SHEAR TESTS are performed by Timber Engineering Co. with this equipment.

Marine Laminating Comes of Age

Modern adhesives, gluing practices improved by research, and practical advantages of wood in certain naval vessels mean enlarged market. Part II

By R. C. Cranch, Materials Engineer, Wood Products Branch, Bureau of Ships, Dept. of the Navy, and

N. V. Poletika, Asst. Director of Research, Timber Engineering Co., Washington, D. C.

Usually the laboratory is authorized to deal directly with the manufacturer in obtaining samples and instructions, and in arranging payment for tests. Test results are reported to the cognizant Bureau which places the product on the list if the report is favorable. The Bureau informs the manufacturer of the test results and subsequent decision. The Qualified Products List is for Department of Defense and its contractors, and is not for general distribution. (This procedure is described in detail in *Provisions Governing Application for Military Qualification Tests (Short Title—QPL Summary)*, Department of Defense, 1 December 1950.)

Problems and Solutions

The start of the minesweeper program brought some astonishing facts to the attention of the Bureau of Ships. Between 1942 and 1950, only six adhesives had been listed in Qualified Products List, 397 as suitable for marine service. During 1951 no less than eight manufacturers submitted 15 separate brands of adhesives for listing. It was quickly apparent that a number of adhesives had been developed that could be cured at lower temperatures than seemed possible for the low resorcinol content.

The minesweeper program brought some formidable problems also. Demands for the ships caused a prompt issue of the contracts. The lead builder for AM421 vessels, unable to procure laminated oak expediently, set up to make his own frames. He was extremely successful and provided impetus to the decision that shipyards could be permitted to manufacture their own laminated members.

Although specification MIL-W-15154, Wood, White Oak, Laminated, required prior qualification, many shipyards were producing frames before their techniques were tested. Instances of inappropriate adhesives and inadequate process inspection came to light. A system of quality control tests at designated laboratories showed material to be deficient in many cases. Because production schedules had to be met, manufacturers were allowed to stay in production at the risk of costly mistakes, while corrective action was undertaken.

Process inspection was taught through special schools and visits by Bureau of Ships personnel. Tests were required on every member produced until consistently good results were obtained. It was finally established that manufacturers could be placed on the Qualified Products List for Laminated White Oak when 17 consecutive members had proved sound in testing. Thus the specification requirements were finally accomplished without interrupting an urgent construction program.

Throughout this program, the Bureau of Ships has tried to exercise control yet allow operational flexibility in field activities. In lumber procurement, for instance, association grade rules and inspection have been used to a maximum degree.

In requiring extensive testing of laminated products the Bureau designated the Puget Sound Naval Shipyard, Forest Products Laboratory, and Timber Engineering Company as laboratories for the West Coast, Central, and East Coast areas, respectively. Subsequently, the laboratory facilities of Yale School of Forestry and Mare Island, Long Beach, and Norfolk Naval Shipyards have been utilized. In order to facilitate production, some manufacturers have arranged to do their own block shear tests under the supervision of the Navy inspector.

Details of Current Testing Procedures

Methods used to evaluate the strength and durability of adhesive joints in marine laminating are precisely detailed in the applicable government specifications. As with all specifications, however, certain limitations and modifications are necessary to fit any testing program. It is

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the purpose of this section to discuss briefly the actual procedures which are currently being followed by the different testing facilities.

All laminated oak members must be evaluated on the basis of both block shear strength and cyclic delamination tests. This means that after the sample is received by the testing laboratory from the laminator, the first operation is to divide the sample into two sections. One section is processed into a staircase type of block shear specimen and the other is prepared for cyclic delamination testing.

In the preparation of the staircase shear specimen it is necessary to very accurately lay out the required length and width of shear area and to cut the sample with care on a heavy band saw. Tolerances of 100th of an inch are allowed in this fabrication. After the specimen is prepared, it is broken in a testing machine with a rated accuracy of better than one per cent. The evaluation of wood failure, which is obtained from the tested blocks, is of great importance since the specifications allow certain minimum wood failure. The testing laboratories involved have specially-trained personnel who have a great deal of experience in estimating wood failure. These men are charged with the responsibility of obtaining accurate estimates.

The delamination specimen which is three inches in length along the grain and the full cross section of the members submitted for testing, is placed under water in a pressure cylinder which is capable of drawing a vacuum of at least 25" of mercury and a pressure of at least 75 pounds per square inch. The procedure followed consists of two hours under vacuum followed by two hours under pressure, and this operation is repeated once.

After the impregnation of the blocks, they are placed in a specially designed and accurately controlled chamber in which the conditions are between 80-85° F and 25-30 per cent relative humidity with a minimum air flow of 200 ft. per minute. The blocks are so located in the chamber that the flow of air will take away most efficiently the moisture from the surface of the blocks. After 88 hours in the chamber the blocks are removed from the humidity box and again put in the pressure cylinder to start the second cycle. Three cycles of soaking and drying constitute the test.

After the third cycle, delamination is measured. The length of each glue line as it appears on both ends of the block is first measured to the nearest ½oth of an inch. Then the amount of open glue line is measured with the same accuracy and the percentage of delamination is calculated from these two measurements. Actual glue-line delamination is considered in this calculation; an opening along the glue line which occurred in the wood and not in the adhesive is not considered delamination.

Evaluation of Results

With Douglas fir the current procedures require that they be tested in block shear only. However, in certain instances such as important keels and other exposed members, delamination tests are requested by local Naval inspectors.

To interpret the tests obtained, a thorough understanding of the purpose and requirements of the specifications are necessary. In deriving the average block shear strength, the specifications require that individual values, which are below 1800 psi and above 75 per cent wood failure in oak and below 1050 psi and above 75 per cent wood failure in Douglas fir, be excluded from the calculation of the average. The purpose of these exclusions is to eliminate the influence of an occasional weak piece of wood from depressing the average below the minimum requirements of the specification.

These requirements are that the satisfactory oak laminated members shall exhibit an average shear strength

(Continued on page 62)

QUALITY CONTROL TEST DATA
ON LAMINATED SHIP MEMBERS
NAVSHIPS-4246 (REV. 12-51)

See reverse side for instructions

PART A - INSPECTOR'S DATA

Test samples should be clearly marked. Identification of curved members should include numbering of the glue lines beginning from the interior (concave face). In case of straight members glue lines shall be numbered in order of lay-up.

LAMINATING COMPANY: John Doe Laminating Company						SHIP NO.: AM-422	
TYPE OF MEMBER (Frame, keel, etc): Frame						MEMBER NO.: 39	
DATE (Glued): 4-3-52	DATE (Test sample shipped): 4-7-52	ADHESIVE (Brand and No.): Marine Bond No. 13				SPREAD: 70 lbs/1000 sq. ft.	
OPEN ASSEMBLY: 2 MINUTES	CLOSED ASSEMBLY: 35 MINUTES	PRESSURE: 150 PSI	CURING TIME: 8 HRS	CURING TEMP: 150 °F		(Check one) CHAMBER [ ] GLUE LINE [X]	
AVERAGE CURING CHAMBER RELATIVE HUMIDITY (Based on reading taken at two hour intervals during curing period.): 66 %				SPECIES OF WOOD: White Oak		MOISTURE CONTENT: WET 12 % DRY 9 %	
DATE RECORDED: 4-7-52	RECORDED BY (Inspector): James Smith						

PART B - TEST LABORATORY DATA

DATE SAMPLE RECEIVED: 4-10-52	LABORATORY PERFORMING TESTS: Timber Engineering Company

TEST RESULTS

BLOCK SHEAR STRENGTH			DELAMINATION TESTS			
GLUE LINE NUMBER	ULTIMATE SHEAR STRENGTH (P.S.I.)	WOOD FAILURE (Percent)	SPECIMEN NUMBER	TOTAL LENGTH OF GLUE LINE (Inches)	LENGTH OF DELAMINATION (Inches)	DELAMINATION (Percent)
1	2360	100	1	12.63	0.50	3.96
2	2173	95		12.75	0.00	0.00
3	2487	100		12.75	0.75	5.88
4	2113	100		12.75	0.00	0.00
5	1900	70		12.81	0.00	0.00
6	1660*	85*		12.81	0.00	0.00
7	2833	100		12.69	0.00	0.00
8	1833	85		12.81	0.00	0.00
9	1887	75		12.88	0.25	1.94
10	2200	95		12.69	1.38	10.84
AVERAGE	2198	91	XXX			2.25

DATE OF REPORT: 4-23-52 | TEST PERFORMED BY: | CHECKED: W. N. Palethorpe

REMARKS:

*These values were deleted in computing the average in accordance with paragraph 4.4.9.3 of MIL-A-397A, 6 April 1951.

STANDARD FORM for quality control tests is shown above. Information below is printed on back of above form.

Instructions

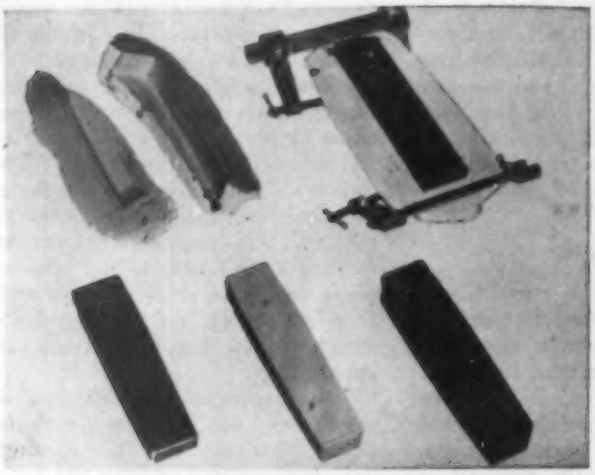
INSPECTOR or SUPSHIPS-INSORD completes Part A only of 5 copies of form.

INSPECTOR or SUPSHIPS-INSORD furnishes 4 copies to accompany each production test sample forwarded to designated test laboratory and retains 1 copy for temporary record.

Test laboratory conducts tests and completes part B of 4 copies of form furnished by INSPECTOR or SUPSHIPS-INSORD.

Test Laboratory retains 1 copy completed test, returns 2 copies to INSPECTOR or Supships-Insord and forwards 1 copy to BUSHIPS.

Originating INSPECTOR or SUPSHIPS-INSORD retains 1 copy, completed test, forwards 1 copy completed test to contractor or sub-contractor, and disposes of temporary record copy.



MOLDS AND PRODUCTS, top and bottom respectively, employ plastic resins and sawdust.

CAST RESIN AND SAWDUST product is removed from rubber mold which facilitates removal.

Casting Resins Turn Wood Wastes To Profits

Molded products open opportunity for small plants to use sawdust, shavings.

T. A. Dickinson

Although there are at least a hundred practical uses for sawdust and other scraps produced by wood fabricators, only the largest wood-products manufacturers are now inclined to recover the dollars represented by their trash piles, due no doubt to the general belief that scrap materials cannot be profitably reclaimed in small quantities.

The latter belief is justified to some extent. For example, the average wood shop could not reasonably be expected to buy the sort of equipment that is required to convert sawdust and shavings into charcoal briquets—simply because the cost of the equipment would be too great in comparison with the amount of money that might be gained by selling fairly small quantities of briquets. However, thanks to the recent development of a variety of plastic casting resins, it is now possible for most woodworkers to convert their scraps into usable materials and products without a large invesment in special tools and equipment.

Plastic casting resins are closely related to the adhesives used in the manufacture of plywood, being primarily distinguishable to the extent that they can be converted from liquids into solids without any substantial amount of shrinkage. In general, they can be classed as:

(a) Thermoplastic resins—materials that can be melted, like waxes and metals, at temperatures in the neighborhood of 300° F.

(b) Thermosetting resins—materials that can be permanently solidified, like the dough used in making bread, with heat (the temperatures normally being less than 200° F.).

Of these, thermoplastic resins are of little importance in the reclamation of wood scraps because of their relatively-high melting temperatures. Thermosetting resins, on the other hand, are binding media in which the smallest wood particles can be effectively dispersed prior to solidification —after which the wood-plastic materials will normally resemble a fine grade of hardwood in terms of fundamental physical properties. Moreover, it is possible to:

(1) Pigment a thermosetting resin prior to solidification, so that it will require no eventual finishing.

(2) Cast a wood-resin mixture in a low-cast mold or form so that it will require no turning, sawing, sanding, etc., after it is solidified.

Phenol-formaldehyde resins are probably the least-expensive and most-practical thermosets for the reclamation of a majority of wood scraps at this particular writing. They are sold as viscous, dark-colored syrups and may be stored for more than six months prior to use without resultant difficulties—an important point to bear in mind because some thermosetting resins will solidify in less than 30 days, regardless of whether they are used.

Mechanical mixers should be used to disperse wood scraps, pigments, etc., in large quantities of thermosetting resins. One or two gallons of the same materials can be manually mixed with a stick in any clean container.

When materials such as wood scraps and pigments are thoroughly dispersed in the resin, a catalyst or hardening agent is usually added to the mix to accelerate the solidification of the resin. Phenol-formaldehyde resins normally require the use of an acid catalyst (such as hydrochloric acid mixed with glycerine), about one part of the catalyst being added to each ten parts of resin, by weight.

Most plastic casting resins of the thermosetting type can be catalyzed so that they will solidify, like plaster, at room temperature. But, as a rule, it is desirable to limit the quantity of catalyst so that there will be no opportunity for the resin to solidify until it is heated slightly.

Molds for casting wood-resin mixtures may comprise wood, plaster, metals, ceramics, and many other materials. If they are made from porous materials, such as wood or plaster, the mold cavities should be carefully seal-coated with three or four layers of lacquer or shellac prior to use.

Floor-wax emulsions of the types used by most housewives are satis-

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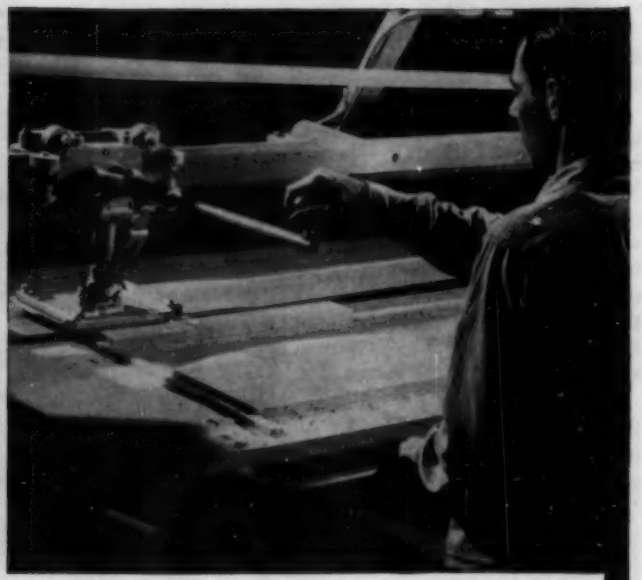
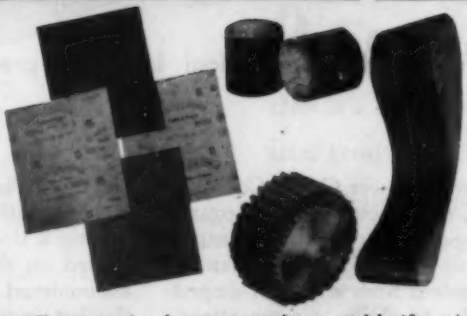


What's *your* particular finishing headache? Not getting enough finished pieces per belt? Belts have to be replaced too often? Cutting rate drops too fast after the first few passes? Then you want those rugged, long-life Belts by CARBORUNDUM. Paper or cloth backing—garnet or aluminum oxide grains—specific coatings for hard or soft woods—we've got the exact combination you need. Call your CARBORUNDUM or distributor salesman—or write Dept. W 82-59.

There's a product by CARBORUNDUM for EVERY finishing operation



"RED-I-CUT" WATERPROOF PAPER gives faster cut, better finish, averages 25% more "mileage."

CABINET AND FINISHING PAPER is exceptionally flexible and tough, with longer cutting life.

"HOLAP" PAPER SLEEVES assure fast, money-saving scroll sanding. No splice marks—high resistance to peeling.

VONNEGUT BRUSH-BACKED SANDER HEAD is often the *only efficient way* to finish unusual shapes and contours.

YOU'LL GET OUTSTANDING overall economies from a central saw and knife maintenance department, staffed with skilled maintenance men and able apprentices, and equipped with the proper Grinding Wheels and Sharpening Stones from the complete line by CARBORUNDUM.

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factory "parting agents" for a majority of the molds used in casting plastics, and should be uniformly applied over seal coatings or nonporous cavity surfaces before each cast is made.

As a rule, rigid molds are preferable where relatively simple casts should be made with maximum dimensional accuracy. Flexible molds, comprising natural and synthetic rubbers, are sometimes desirable in making intricate casts because their "stretchability" eliminates the need for a different mold part for each backdraft or undercut.

It is difficult to mix and pour any liquid without getting a certain number of air bubbles into the solution. Most of the air bubbles in a wood-plastic casting mix will rise to the surface of a conventional open-top mold, if the cast materials are not solidified immediately after they are poured; but, in some circumstances, special efforts must be made to "de-air" a liquid cast. This can be done by:

(a) Mounting the mold containing the cast on a surface which can be mechanically vibrated so as to disperse air bubbles within the cast.

(b) Placing the mold on a turntable so that it can be rapidly rotated for a few minutes prior to the solidification of its cast by means of a drill press, the purpose of this being to create centrifugal forces which will disperse air bubbles.

(c) Situating the mold in an air-tight chamber, so that air in the chamber and in the cast can be simultaneously withdrawn by means of a vacuum pump.

When a phenol-formaldehyde casting is properly de-aired, heat can be used to harden the contents of a mold in a period of 30 minutes to 3 hours—depending on the amount of heat that is applied. As a rule, a fairly-long curing cycle (at a temperature of about 150° F.) will yield the best phenolic casts. Higher temperatures can produce defects by causing a cast resin to boil.

Heat-cured casts are generally allowed to cool to room temperature before they are separated from their molds.

Casts made by bonding wood scraps with phenol-formaldehyde resins are typified by the following physical properties:

Color without pigments	Opaque Ivory
Color Stability without pigments	Darkens with Age
Mold Shrinkage, in. per in.	0.006
After Shrinkage	None
Specific Gravity	1.17
Specific Volume, cu. in. per lb.	23.7
Tensile Strength (½" x ½" sample), p.s.i.	3600
Compressive Strength, p.s.i.	8100
Flexural Strength, p.s.i.	4000
Izod Impact Strength per in. of Notch (½" x ½" Notched Bar), ft. lb.	0.18 to 0.36
Rockwell Hardness, L-scale	60
Thermal Expansion, in. x 10^{-5} per in., °C	9.3
Resistance to Continuous Heat	160° F.
Resistance to Open Flame	Chars, Won't Burn
Resistance to Water and Oil	Excellent
Resistance to Organic Solvents	Excellent
Resistance to Acids and Alkalies	Very Good
Electrical Classification	Dielectric
Machining Qualities	Like Hardwood

GROOVER SAW with dado blade cuts wet wood.

Portable Saw Solves Problems

Veneer turned from conical log with pre-cut slot saves material.

Williamson Veneer Co. of Cockeysville, Md., manufacturer of mahogany veneer, needed a simpler, cheaper way to square off veneer panels, which were cut from a conical-shaped log in order to obtain a more attractive grain pattern.

When the sheets were shaved off the conical shaped log on a lathe, the panels came out in a roughly triangular shape. After these panels were taken from the lathe, they had to be put through the clipper machine, which, by means of a series of knives, would stamp off the angular edges to make the panel square.

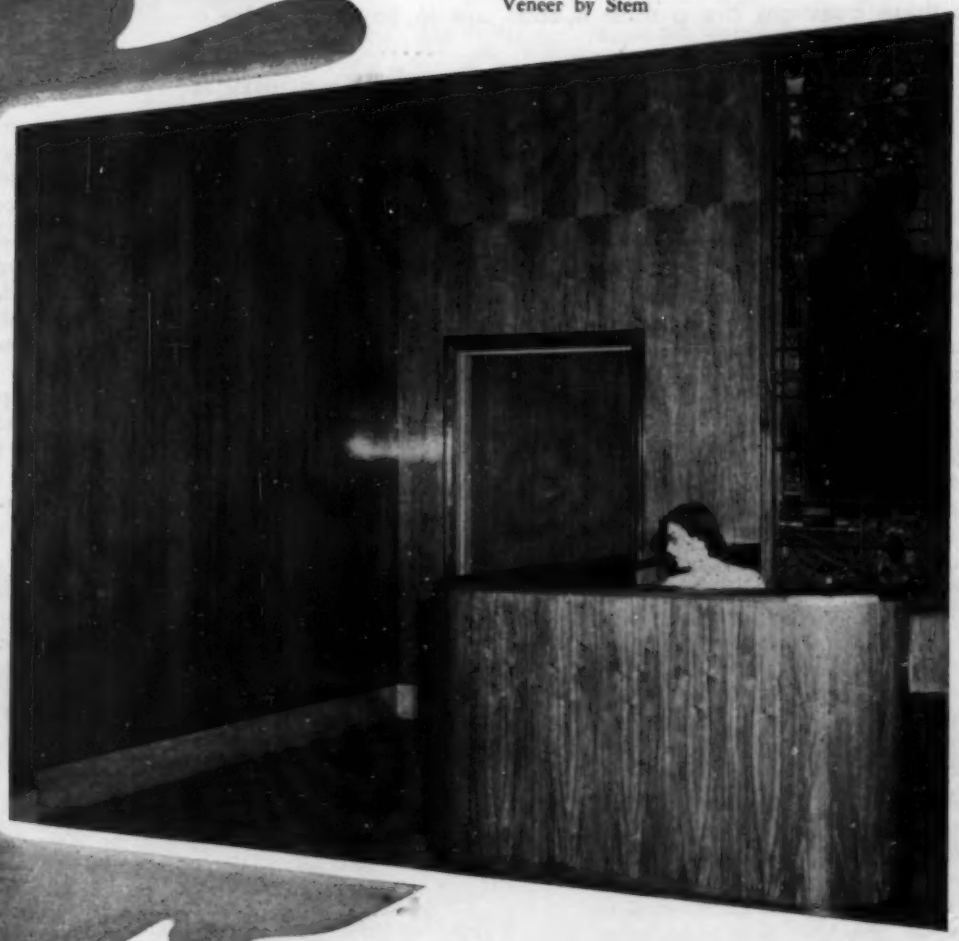
Besides requiring the extra operations, this process resulted in too high a breakage of the veneer panels.

The Williamson company experimented with a portable power saw, cutting a slot in the log before it was turned on the lathe. A problem was encountered here, however, because the hot, moist wood, soaked in near-boiling water for at least 24 hours before being turned, loaded up ordinary saws and blades. Finally, however, the company found that a groover saw, with dado blade attached, would make the desired slot in the heated, wet log without loading up.

Now the company turns the conical log and comes out with the "squared" panel. Clipper work and breakage has been reduced to a bare minimum.

Customers Expect More From STEM and They Get It

Reception lobby of St. Vincent's Hospital, New York City. Veneer by Stem



Only fine veneers create such rich dignity

Here is a beautiful example of what can be done with character grain walnut. It illustrates the growing trend to capitalize on the individual grain characteristics created by nature. Texture, so highly regarded in modern design, is best achieved in these beautiful contrasting grains.

CHESTER B. STEM, INC.
818 Grant Line Road, New Albany, Indiana

These higher grades of
VENEER and LUMBER
manufactured and available at all times

American Walnut . . . Avodire . . . Hard Maple . . . White Ash . . . Yellow Poplar . . . Cherry . . . Indiana Soft Textured White and Red Oak . . . Butternut . . . Prima Vera . . . Honduras and African Mahogany . . . Knotty Pine . . . Sapeli . . . Special logs for special places . . . lumber from modern dry kilns.

Production Management Helps Control Costs

What, Why, Who, and How are the questions an industrial engineer asks about every factory operation. Right answers to these questions are a must if costs are to be kept under control.

GEO. FRY & ASSOCIATES
Management Engineers

The past twenty-five years—and particularly the past ten years—have seen an amazing transformation in the American factory. The improvement and progress in technical methods and in production machinery have been matched by an almost equally astounding development in *production management techniques.*

Production engineering has come of age. The well-organized factory, with clearly defined jobs and methods, centralized procedures for production planning and follow-up, production standards and incentives, controls on scrap, rework, and yields, and an efficient layout designed for rapid straight-line flow of work, is now the norm. It is more than a norm; it is a *must* in an industrial situation where intense competition requires finger-tip control of costs and production.

Yet it is only very recently that the real impact of modern production engineering has made itself felt in the wood products industries. While even in such specialty manufactures as, for example, machine tools and custom-made clothing, a complete industrial engineering program is accepted as an essential in factory management, in the wood products industry this is far from the case. And it may not be entirely a coincidence that the wood products industries are plagued by low profit margins *except* where they have a large inherent price advantage.

Your plant may already be taking advantage of the most up-to-date production engineering methods. Or it may not need to. However, if you have ever been struck by any situations like the following, you may be interested in the application of some of the latest production engineering concepts to your industry:

- Mulling over the thought of what to do when your superintendent or foreman retires, taking many years of know-how with him and no record of it behind.
- Umpiring between the sales manager, with a sheaf of "urgent" orders in hand, and the superintendent, with his running schedule firmly fixed in mind.
- Not knowing just how much down time there is, or just what it is doing to costs.
- Watching an operator reject board after board, while production waits, until he finds one which meets his quality standard which is not really refined nor properly controlled.

First of all, there have been good reasons why the wood products industries have been almost the last to adopt the latest concepts of production and industrial engineering:

1. *Wood products are historically 'craft' industries*—furniture, fine woods, paper, paperboard, and other similar products have long depened on the fine quality and good workmanship rather than on highest production and lowest costs. It is difficult to believe—although true—that high productivity and lowered costs *can* be achieved without sacrifice of quality.
2. *Raw materials in the wood industry are not standardized*—the question of grains, finishes, knots, fibers, etc. has made it very difficult to operate wood products industries on a "production-line" basis. It is becoming realized, however, that special procedures can be set up to check these natural variations beforehand, run a smooth flow of materials into the shop and at the same time get maximum yields.
3. *Management in wood products industries has been conservative*—the attitude of many producers in the wood products field has been somewhat resistant to change in factory management methods; attention has been focused instead on superior products and on developing a strong relationship within the shop force.

This is the first of a four articles designed to explain the advantages of a modern production engineering approach to the problems encountered in the operation of a wood products factory. Future articles will cover plant layout, production planning and control, and production standards and wage incentives.

Whatever these underlying factors have been, the present time is an ideal one for the wood products industries in general to set their houses in order—to lay out, organize and control their plants by use of the production engineering principles which are being applied so successfully in the metal trades, in food processing, in electrical products, in printing and publishing, and in some highly successful wood products companies.

There are four guiding principles in modern productive management which can be of especial value in the wood products plant:

1. All factors contributing to cost (except actual production time and waste) are taken outside the control of the operators.
2. The shop is laid out to move material the fewest times and the shortest way possible.
3. Production is planned and scheduled in advance.
4. Production and productivity are measured and controlled against realistic standards which are known and understood by the worker.
5. Scrap is at a minimum through realistic controls on production yield from raw materials.

To bring these principles into action requires the use of the essential trait of the industrial engineer: a *questioning attitude.* Each method, each operation, each procedure must be examined and searched:

What is done?
Why is it done?
Who should do it?
How can it be done better?

As an example of the first principle above—taking non-labor items out from under the control of the operator—the selecting operation at a major wood products plant may be cited.

(Continued on page 70)

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Sea Swirl

T. M. REG.

Here is the *new look* in ceilings. It is achieved with *Sea Swirl* decorative plywood, made from superior grades of Douglas fir plywood. This three dimension plywood is beautiful, practical and versatile. Interior and exterior types are available in 4′ x 8′ size, 5/16″ thickness (other sizes on special order). Uses are unlimited in remodeling or new construction: for ceilings, walls, built-ins, furniture…*Sea Swirl* is available at APMI sales warehouses. Contact the one nearest you or write for illustrated booklet.

APMI

Producers of Sea Swirl, Douglas fir plywood, mahogany faced plywood, Plyron, Handy Panels.

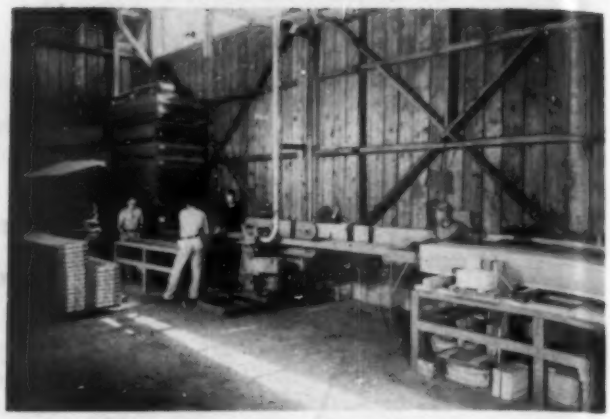
Associated Plywood Mills, Inc.

GENERAL OFFICES: EUGENE, OREGON
MILLS AT EUGENE AND WILLAMINA, OREGON

SALES WAREHOUSES: 4268 Utah Street, St. Louis, Mo.; 4814 Bengal Street, Dallas, Texas; 4003 Coyle Street, Houston, Texas; 1026 Jay Street, Charlotte, N. C.; 111 Welborn Street, Greenville, S. C.; 925 Toland Street, San Francisco, Calif.; Eugene, Oregon.

SALES OFFICES: 31 State Street, Boston, Mass.; 1854 Broe Burn Road, Altadena, California.

PRECISION PLANER shaves panels to tolerance of 1/1,000 of an inch for special uses.



TONGUE AND GROOVE panels are produced by special machines to supply building market.

LOAD OF PANELS, with chemicals applied, head for heat treating ovens.

SPECIAL SIZES are cut on custom basis. This service has built up new business.

This Plant Is Geared To Customer Needs

When production lines are geared to meet customers' needs, markets for special product uses are easier to expand.

Setting a new pattern of activity for development in hardboard field, Forest Fibre Products Co., of Forest Grove, Oregon, is rapidly expanding the special products department to adapt the board to meet the specific needs of many industries and create new selling opportunities. Many new products have already been placed on the market for industrial and building material uses.

Up until the present time the efforts of hardboard manufacturers have been concentrated in producing standard grades and sizes so that the users had to adapt his process to make use of the board. Forest Fiber Products Company is pursuing the policy of making special products which fit the needs of the buyer.

The new products department begins directly behind the unloader that serves the hot press and humidifiers. The department consists of four distinct sections: the special post-treating plant, cut-to-size and tongue and groove production line, precision planer line and stock sizer line. All lines feed directly to the warehouse and shipping area.

A special rail transfer car conveys panels from the unloader either directly to the warehouse or to one of the production lines, which are arranged in parallel.

Treated Panels

Originally the company produced only standard and treated grades in 4x4 to 4x16-foot sizes. With the development of the special cost-treating process, however, standard boards from the regular forming line are now taken from the warehouse or forming line to receive special treatment for specific requirements. The post-treating department, in addition to increasing production, has made possible a wide flexibility in the types of treatment.

Hardboard taken from regular production lines may be run through a special oil impregnating machine. Next boards are transferred across 16-foot wide gravity rolls to a special loading device. Then a tilt-hoist lifts the board to a special heat-treating oven. Following the baking process, the panels are moved across short transfer rolls into re-humidifiers and then routed back to any of the desired production lines or to storage.

The post-treating unit will handle approximately half the production of the hardboard plant. Two men handle the operation.

The second production line handles

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the cut-to-size and the new tongue and groove operations. The first section trims the edges to four-foot widths and further divides the panel into 16¾-inch wide sections. The narrow panels move forward to a cutoff table and are cut to eight foot lengths.

Specially Packaged

Behind the cutoff saw table a newly designed tenoner shapes the ¾-inch tongue and groove. The completed panels are packaged eight to a carton, ready for storage or shipment.

Exact Thicknesses

The third line is designed to produce exacting thicknesses. A precision planer shaves the screen or under-side to a maximum tolerance of a five-thousandth of an inch. These panels are primarily for flooring underlayment and other uses requiring exacting thicknesses.

From the planer, panels are cut to special orders for length or width, then are wrapped and stored.

The fourth line is the standard sizing department where panels are cut to 4 x 4, 4 x 6, 4 x 8, 4 x 10, 4 x 12, and 4 x 16-foot sizes. The special sizing equipment is patterned after the standard type skinner and cutoff saws. It first trims the edges and then is cross-conveyed to the cutoff saws for cutting to length. Wrapping is carried on in a continuous production line with sizing equipment in a green wrapper in standard pallet loads for the warehouse.

New Products

Forest Fiber Products Company has several new products during the past six months: a special low-density economy board for general utility and industrial use; an underlayment for use under linoleum or tile; a special resin impregnated board developed to meet special laminating requirements and primarily used as a face for Plyron by many plywood manufacturers.

With the recent introduction of the new tongue and groove panel, the company is for the first time diverting major attention to the expanding of hardboard uses for the building materials field, developing special products for special uses.

The process used in hardboard manufacture is the so-called "wet" process, forming the wet pulp on a screen in continuous production. The plant produces 200,000 feet per 24-hour day on a ¼-inch basis.

Slabs are picked from the sawmill conveyor and fed directly to a 72-inch chipper. Chips are screened and carried over a vibrator. Oversize chips and sawdust are diverted to the fuel bin and acceptable chips are conveyed to the chip storage bin on a 160-foot long belt.

At the hardboard plant the chips are reduced to pulp by two defibrators feeding to four double-disk pulpers. The slurry goes through a washer for extra refining before reaching the storage chests where sizing material is added. From the chests the slurry travels to the forming machine and into a 4 x 16-foot, 20-opening hot press. All loading and unloading equipment for the press was designed by company engineers.

From the forming machine the boards are trimmed and cut to 16-foot lengths by water jets synchronized with the machine speed, before being automatically fed to the hot presses.

After hot pressing, the boards are transferred in special racks that hold 28 press loads. The racks hold the boards during their four to six hours in the humidifiers.

Following the humidifying, the racks are moved to a roll unloader and the completed boards are either sent directly to the warehouse or to the special transfer car that feeds the new products manufacturing department.

and at a lower cost

That's right! With Jewel Natural Garnet Belts you can increase production . . . maintain highest product quality . . . and *still* reduce your overall costs. Here's why:

1. Jewel Natural Garnet cutting edges are toughened and tempered by a special patented process, made to last longer . . . to cut cleaner, faster . . . to "fill" less quickly. This means more production per belt, fewer replacements and lower labor costs.

2. All Jewel Garnet Belts feature exclusive, longer-wearing "Velvet Joints" that eliminate bumpy, uneven belt travel. This means fewer rejects . . . clean, satin-smooth finishes on *all* your products . . . better overall belt performance day in and day out.

3. Jewel Brand Belts are available in a full range of sizes for both portable and large stationary sanders. This means that you can stock top quality abrasive belts for every finishing job in the shop . . . order from one dependable source of supply . . . save time, save money.

Ask your distributor for complete information on Jewel Natural Garnet Belts today — or write direct. Abrasive Products, Inc., 553 Pearl St., South Braintree 85, Massachusetts.

SHARPER, TOUGHER

Jewel Brand COATED Abrasives

CUT COSTS!

Practical Facts on How to Use Imported Hardwoods

Species of wood should be chosen with both end use and machining requirements in mind. Part II

by Robert W. Hess
The Mengel Co.

Except for extremely dense woods and part of the soft, spongy type of low density woods, practically all tropical woods can be veneered on a practical, production basis. There are exceptions, of course, such as the few that have calcareous deposits associated with wounds or other defects. Of these, the fingers of one hand will tally the ones with valuable wood. Even silica deposits that will dull saws (such as in Oriental Wood, Albarco, and some Shoreas) do not seriously hinder veneer cutting with lathe or slicer, and these deposits are not present in most tropical woods of interest for veneering. Reasonably fresh logs of nearly all tropical species within the specific gravity range of 0.45 to 0.70, if properly treated and handled, can be cut into fair to good quality veneer. Some will require more care and skill than the more compliant of our native species.

The heavier tropical woods will often differ from similar temperate woods in their sensitivity to veneer-lathe nose-bar pressure and spacing between the bar and knife. There seems to be little tolerance in these settings and adjustments may be necessary for cutting different parts of the same log in some instances. Probably, there are equally small tolerances in knife angles for good cutting with such woods. Possibly, comparatively high hardness and low across-the-grain tensile strengths have a bearing on these requirements.

Some of the harder and denser woods contain a high percentage of gum. Aging of the logs of some of these appears to bring about an irreversible hardening (of the gum?) that results in notably more difficult veneering. Cooking at higher temperatures or for prolonged periods is not very effective in this case. Veneer cutting soon after is the obvious solution. For all dense woods (0.70 to 0.85) thorough cooking at high temperatures, adequate power, very accurate setting, and a head that will not deflect under high bar pressure are required. Optimum cooking temperatures of the various species are often not in good relationship to their densities. The bulk of the medium to low density woods require no special precautions or preparations.

Some of the softest woods will slice with only moderate difficulty, but do not rotary cut well. The most common troubles are grain tear-out, marking from soft fibers draping over the blade edge and uneven veneer thicknesses. Very sharp knives are required. Best cutting is generally achieved with "cold" logs, freezing could no doubt improve some of them.

Torn fiber or "shell" appears on rotary cut stock of many woods and reults from poor cutting through bad cross-grain areas. In some instances, this cross-grain is no more than the layers of uniformly interlocked grain that forms the stripe on the quarter;

QUICKLY BORE SMOOTH
HOLES UP TO 3" WITH THIS
VERSATILE MULTI-SPUR BIT
A fast, smooth-boring bit for those special jobs beyond the scope of the usual machine bit. Bores any arc of a circle on an edge of a piece of stock. Operates well in either soft or hard woods and is often preferred for end-grain work. Smoothly bores veneered stock without tearing and will bore at an angle, overlapping, or at close centers without splitting stock. Stocked in sizes ½ to 3". Write for facts. Greenlee Tool Co., 2161 Herbert Avenue, Rockford, Illinois.
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HOLLOW CHISELS • MACHINE BITS • DRILLS
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Chevrolet trucks *list for less* than any truck with comparable specifications that can handle an equal payload. Yet your money buys a combination of great truck features that you'll find only with Chevrolet. And that means value unmatched by any other truck in its field.

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OPERATING COSTS SAVE YOU MONEY

Chevrolet's time-proved Thriftmaster and Loadmaster Valve-in-Head engines are famed for fuel, oil and upkeep economies. Extra-rugged frame, hypoid rear axle, Flexi-Mounted cab, and other features keep the truck rolling for many thousands of low-cost miles.

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With Chevrolet's wide range of models, there's never the problem of "too little" or "too much" truck for the job. Each truck is factory-matched to its job. Standard body on standard chassis, or standard chassis for a special body, there's a Chevrolet truck to cut your costs.

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Big demand for Chevrolet trucks means a traditionally higher price when you trade your Chevrolet for a new one. You save money all the way with a Chevrolet—from the day you buy it until the day you trade it. See your Chevrolet dealer now—and save!

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load • POWER-JET CARBURETOR—for smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH—for easy-action engagement • SYNCHRO-MESH TRANSMISSION—for fast, smooth shifting • HYPOID REAR AXLE—for dependability and long life • TORQUE-ACTION BRAKES—on light-duty models • PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES—on medium-duty models • TWIN-ACTION REAR BRAKES—on heavy-duty models • DUAL-SHOE PARKING BRAKE—for greater holding ability on heavy-duty models • CAB SEAT—with double-deck springs for complete riding comfort • VENTI-PANES—for improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING—for easier handling • UNIT-DESIGNED BODIES—for greater load protection • ADVANCE-DESIGN STYLING—for increased comfort and modern appearance.

CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN

CHEVROLET first in demand in value in sales

in others, it is a manifestation of typically irregularly interlocked or cross-grain. Such "shell" or rough-cutting can only be minimized or eliminated by careful control of all good veneering practices—no one variable or setting seems to dominate control. These spots of rough cutting tend to increase the amount of clipping necessary and may be significantly high in some woods. (Rough cutting should not be confused with loose cutting which can usually be controlled through proper bar and knife settings if the knife is sharp.) Wild-irregular-, or interlocked-grain woods do not present as much of a problem on the slicer.

As mentioned in an earlier paragraph, the greatest problem of all is the usual poor condition of logs by the time they reach the lathe or slicer. It is unreasonable to expect that logs of a wood hard enough to stand abuse in a furniture panel can be readily cut into veneer after several months of alternate exposure to broiling tropical sun and drenching rains.

Marketing of Tropical Woods

Marketing of veneers and plywood made from newly introduced tropical woods has proven to be the major stumbling block to many producers. Despite a very few notable successes, the problem is far from solution. After hundreds of attempts over the course of many years, only a few new woods have attained general acceptance. Despite the record of costly failures, however, there is increasing interest in this promising source of veneer quality logs. Widespread use of many tropical hardwood species is inevitable. Whether it will develop rapidly or discouragingly slowly will depend mostly upon the extent and quality of the promotional effort.

The initial phases of the marketing of veneers and plywoods made from these little known woods presents a difficult problem. Volume production is often necessary to warrant the equipment, personnel, and establishment necessary for efficient extraction of the timber. Further, it is often necessary to bring out considerable quantities in order to appraise costs with reasonable accuracy. Obviously, these considerations are not compatible with a prolonged promotional period to gain acceptance of a new wood. It may be necessary to obtain initial production through small local producers. There are increasing numbers of these operators in all parts of the tropics and some can be depended upon to produce moderate quantities, provided they are carefully instructed during initial stages.

The outlets for tropical veneers and plywood should be at least as diversified as the entire range of our domestic hardwoods. High ocean freight rates will usually leave little or no profit margin in applications for which low grade or cheapest veneers are suitable. Thicker core veneers will be unprofitable from some regions for the same reason. It is in the thinner face veneers of high quality that the tropical woods find their margin of profit. With volume production and a sizable market, it should be possible to bring a considerable number of good tropical veneers into this country in the price range between gum on the low side and birch and mahogany on the high side. It is in the medium to lower price bracket that the big opportunity lies; at high prices the traditional face woods are preferred.

One of the easiest ways to circumvent buyer resistance is to offer the new wood in a product such as furniture or plywood panels. Furniture is particularly advantageous because the finishing is in the hands of the manufacturer, thus eliminating hesitancy on this score. Plywood for wall panelling should be a good product if the plywood can be produced at competitive prices.

(Continued next month)

a UNION machine . . .
TO MEET ANY WOOD GLUING NEED

UNION SERVES OVER 2,000 SATISFIED CUSTOMERS

UNION MODEL 10 TABLE-TYPE EDGE GLUE SPREADER

Single roll, all-purpose, for gluing edge or small surface. Roll lengths, 12", 18" or 24". Diameter 8¾". Doctor roll is adjustable. Rolls are easily removed for cleaning. Jacketed copper glue tank for either steam or electric heat.

UNION MODEL 60 BENCH-TYPE EDGE GLUE SPREADER

Spirally corrugated, chrome-plated roll; 8" or 10" long by 6½" diameter. Longitudinal corrugated or rubber-covered coating roll also available.

UNION MODEL 13 BENCH-TYPE EDGE GLUE SPREADER

For either edge or flat surface gluing. Manually operated. Furnished with steel roll longitudinally corrugated for hot glue, or with neoprene-covered roll with spiral corrugations for resin or cold glues. Lengths—12", 18", 24".

• • • •

NOTE: Any Union spreader available equipped with rubber-covered doctor roll, if desired, at no additional cost.

• • • •

Write for data on the complete Union line. Name of Union agent in your territory will be supplied on request.

Union makes equipment for every standard production job in wood gluing. Also designs and makes machines for special applications—including machines for electronic gluing.

Write for your free copy, "The How's and Why's of Wood Gluing," by Thomas D. Perry.

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USERS SAY UNION CUTS COSTS — SPEEDS PRODUCTION

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YOU CAN ADD THIS UP **fast**

DRIVES FASTER—*SAVES ASSEMBLY TIME*
+ HOLDS TIGHTER—*FEWER SCREWS NEEDED*
+ SAFER TO USE—*FEWER REJECTS*
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Important Savings for you!

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Get all the facts on this new screw that fastens wood to wood, metal to wood, or plastic to wood. It has four new basic improvements.

1 Relieved shank diameter
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Can be furnished in either Slotted or Phillips Recessed Heads.

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Education

(Continued from page 25)

saws, economical considerations, recommendations to mill owners, sawyers and filers regarding sawing and filing practice.

Filing Room: Location, dimension, lighting and heating arrangements choice of filing room machinery and tools, filing room layout.

Saws: History, classification of saws, elementary action of the saw tooth, chamber of capacity of the tooth gullet, classification of saws and saw teeth.

Circular Saws: General description, blades, gauge, saw teeth, cutting speeds, feed, horsepower requirements, number of teeth, filing, setting, lasting quality of cutting edges, general consideration on inserted tooth saws.

Hammering of Circular Saws: Theory of tension effect of heat, radial and circumferential stresses, preloaded wheels neutralizing centrifugal force, gyroscopic force, leveling, tensioning and plumbing of circular saw blades.

Band Saws: (a) Wide band saws, —description installation, alignment, speed, band saw teeth, automatic grinding, setting, tensioning and rolls, heat tension, brazing and welding.

(b) Narrow band saws—description installation, speed, teeth, automatic and hand filing, setting, brazing and welding.

Mechanical: (a) Reciprocating saws—care and maintenance.

(b) Chain saws—care and maintenance.

Files: Classification and use.

Grinding Wheels: Classification and use.

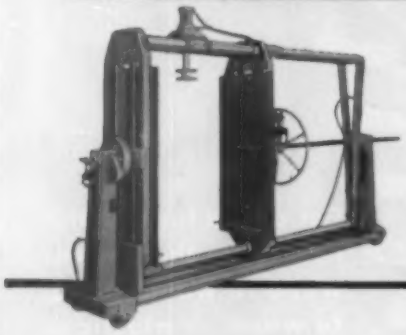
Formulas and Tables: Mathematics, calculations, pulleys, straps and so forth.

General: French, English, Science and Mathematics.

Knife Grinding: A separate course is now being planned by the school to train knife grinding specialists.

This successful Sawfilers Course in The Sawmill School of Duchesnay presents a real challenge to the Forest Products Industry in the United States. We have solved some of our problems with excellent schools and courses in lumber grading and dry kiln operations. The need for a school or schools for developing and training craftsmen in sawfiling and knife grinding in the United States is increasing each year. The Editors of WOOD AND WOOD PRODUCTS will appreciate any suggestions our readers may have for the solution of this timely industry problem.

Clamps

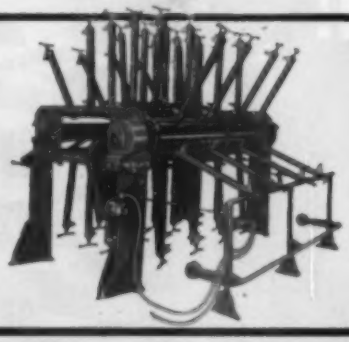


CASE CLAMPS

Massive tubular supports are mounted as fixed preloaded beams that will remain rigid and true, insuring accurate work under any load. No cast iron is used in any strain receiving member. Convenient controls and a powerful brake make operation easy and accurate. Write for Bulletin 11-J.

CLAMP CARRIERS

Black Clamp Carrieres are made in a practically unlimited range of sizes with respect to the number and width of sections and number, length and style of clamps. Carriers are made entirely of arc-welded and fabricated steel, providing an unbreakable frame and permitting flexibility of design. Write for Bulletin 11-K.



SASH AND FRAME CLAMPS

Black's two-way pneumatic clamps are mounted on a rigid, solid steel base with all controls conveniently grouped at the front. Valves and air supply lines are protected from damage by this base. Black clamps have been tested under production conditions, and proven to be fast, efficient and reliable. Write for Bulletin 11-M.

"If its gluing equipment—we have it"

THE BLACK BROTHERS CO., INC. 810 9th ST., MENDOTA, ILLINOIS

WOODICTIONARY

OVERHANG

The forward pitch given to a pile of lumber.

Fig. 2, N. Here the effect of pressure on the tips between the grooves, tends to eject the glue from the grooves. Good results have been reported for this shape, with from 14 to 30 spiral grooves per inch.

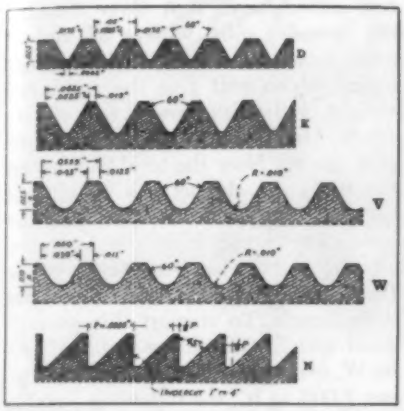


Figure 2.

While no very accurate test data exist, it appears that about half of the glue in the groove is transferred to the wood, with figures varying from 34% to 65%.

Q. 3. How often do rubber roller spreaders have to be regrooved?

A. 3. No definite answer is possible. Many furniture factories, who thoroughly clean their spreaders every night, report that six months between groovings has been found satisfactory. In one instance, a plywood factory, which operated three shifts 24 hours per day, and did not wash their spreader rolls regularly, found that a regrinding was necessary about every month.

In any event it is essential that there be a spare set of rubber rollers, regrooved and ready to install, as accidents can happen, that will tear the rubber, such as heavy slivers. The manufacturers of spreaders are equipped to give prompt service on reconditioning spreader rollers. Some plywood factories find it economical to equip an engine turning lathe, for such regrooving, in their own establishment.

The useful life of spreader rollers can be considerably prolonged by careful operation, feeding the veneers, first at one side and then at the other. Putting veneers through on an angle utilizes all the roller area and distributes the wear over the length of the rollers.

Particular emphasis should be placed on regular and thorough cleansing of the rollers. An excellent method is to take a fiber scrub brush, as is widely used on floors, attach it to the end of the hose and hold it against the grooves as the rollers revolve. A slanting hole should be bored through the scrub brush back, into which the hose will fit, and the hose wired in place. This simplifies the cleaning, avoids the damage that might occur with wire brushes, and eliminates the hazards to hands if the workmen are not careful. Never hold rags nor waste against a moving roller, as serious accidents have happened.

Cold or luke warm water can be used in cleaning the rollers. Hot water or steam will harden the resin adhesive and increase the diffculties of cleaning.

The best rule is to clean the spreader every night just as the factory is shut down, while the glue is still soft. Delays in cleansing will make it much more difficult, as it is the nature of all resin adhesives to harden and clog the grooves to a point where the rubber may be damaged in cleaning.

Q. 4. One of our men claims that the spread is best regulated by the tension between the rollers, another claims the doctor rolls give the most reliable

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adjustment. Which is right?

A. 4. The first man is wrong and the second man is right. The proper adjustments for spread should be made as follows: 1st—Set the tension between the upper and lower spreader rolls so that the veneers are drawn away from the feeding end with enough force so that a workman cannot hold them back by hand. This can be tested with narrow strips of veneer of the proper thickness. The tension should be slightly more than can be held back, and should be the same for the entire width of the machine. If tension in the center is inadequate, the rollers need regrooving. 2nd—Adjust the doctor rolls to give the same spread above and below, for which the calibrations on the adjusting screws are intended. Experience will enable an operator to judge when the spread is about equal on both sides. This is one of the principal reasons why spreading in narrow beads is preferable to an over-all film coating. While observation can determine the uniformity of the spread on the two sides of the veneer, it is not safe to attempt to judge spread ratios by this method. Regular weighing tests should be made as described under Q. 5.

Q. 5. How often should glue spreading ratios be tested, and what is the simplest method?

A. 5. Tests for spread are simple and should be made at least twice for each 8-hour shift. Provide an adequate supply (25 to 50 pieces) of veneers of the proper thickness, with an area of one square foot, and have a 500 gram scale handy. Weight about six of the samples dry, mark the weight on each and make corresponding entries in the test record card. Run three through the spreader rolls, wiping off end or edge beads of glue. Weight them again, which will give the combined weight of the dry veneer and of two sq. ft. (both sides of one sq. ft.) of glue spread. Note the total weights on the test card, deduct the weights of the dry veneer, the answer being the weights of two sq. ft. of glue in grams, and note on the test card. Average the three glue weights, which should not differ much. To convert this average *gram weight*, which we will indicate by W, from grams on two sq. ft. to lbs. per 1,000 sq ft., the following formula can be used, keeping in mind that 454 grams equal one pound.:

$$\text{Spread in lbs. sq. ft.} = \frac{500 \times W}{454}$$

$$= 1.10\ W$$

In other words, add 10% to the gram weight on two sq. f t.(W) to get the pound rate on 1,000 sq. ft. of single glue line. If the gram weight per two sq. ft. is *30*, the pound rate will be *33* per 1,000 sq. ft. of single glue line. This is the customary standard method for hardwood plywood. In softwood plywood factories many operators consider the testing unit as a double glue line, in which case the formula becomes:

$$\text{Spread in lbs sq. ft.} = \frac{1{,}000 \times W}{454}$$

$$= 2.20\ W$$

In this case the gram weight of *30* would be multiplied by 2.2, giving the answer of *66* lbs of liquid glue per 1,000 sq. ft. of double glue line, which would represent a 3-ply basis.

While a similar test can be made on a scale reading in ounces and fractions, the computation is more complicated and less accurate, so that the use of a gram scale is recommended.

Q. 6. How can thin veneers be kept from following around the spreader rolls?

A. 6. The pointed stripper bars at the out feed end of standard spreaders will usually handle 1/28" veneers without difficulty, especially if fed endwise or at an angle, but thinner veneers require special attention. The simplest method is to use stripper belts

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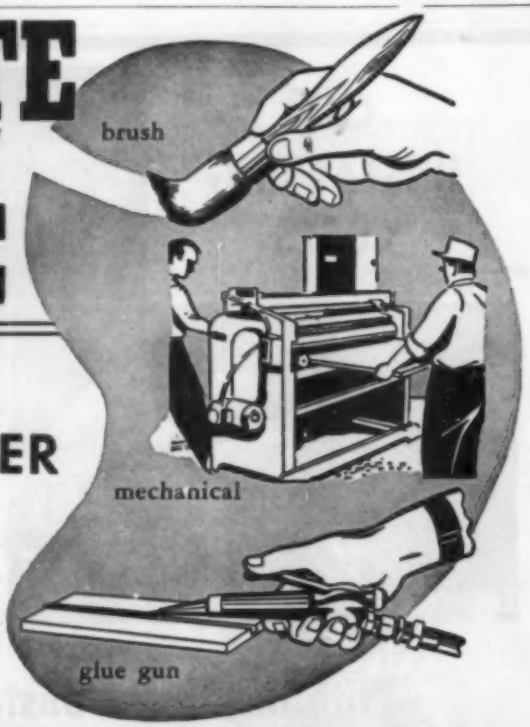

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of small braided wire, such as is used for picture cord or radio antennae, which are very flexible. Small annular grooves, a scant ⅛" x ⅜", are cut (ground) in the grooved rubber rollers, about 9" apart. Plain idler wooden rollers, about 4" in diameter are mounted about 12" in front of and parallel to the spreader rollers. Endless wire belts are spliced together by twisting and allowed to run in the annular grooves of the spreader rollers. While these are not "fool-proof", they are easily repaired and have been found satisfactory.

Since most veneers, thinner than 1/28", are special constructions for technical purposes, where waterproofness is important, most plywood manufacturers do not try to use a liquid glue, which tends to "strike-through" the thin veneers in hot perssing. In its stead they interleave the thin veneers with Tego film glue, which has been found particularly satisfactory when thin veneers are involved.

Q. 7. Most resin adhesives work best at about 70°F, but in the summer our work rooms often range between 90° and 100°F, and the spreadable life of our glue mixes is unreasonably short. What do you suggest?

A. 7. The best answer is that all woodworking factories should be air conditioned, not only to maintain standard mixing formulas in the glue room, but even more importantly to keep all wood parts at a uniform moisture content. There is no doubt but what the practical advantages of air conditioning are gaining more and more recognition. However, many woodworking concerns feel that they cannot afford to install and maintain air conditioning facilities, a view point which is probably wrong, but it must be faced realistically.

A modified answer, that is a definite improvement over uncontrolled atmospheric conditions, is to install cooling devices on the glue mixing and spreading equipment. Steam jacketed glue mixers have been used for years with vegetable glues, and by substituting cold (tap) water for steam, the jacket will serve satisfactorily in controlling the temperature during glue mixing.

Spreader rollers are usually hollow, made of standard sizes of seamless steel pipe, with plugs at the ends, which are turned to proper size for bearings. Pipe couplings, straight or elbow types, are available at most mill supply warehouses, which are designed for free turning without leakage. Such fittings are tapped into both ends of both spreader rolls to permit a constant flow of tap water through the rollers. With proper control of flow through adjustable needle valves, the rollers can be maintained at a desired temperature. A thermometer should be installed in the line near the spreader. Other connections for the water supply are with standard galvanized steel pipe. If the local water supply is reasonable in cost. the used water may be discarded. In other cases a recirculating pump and cooling coils can be installed to conserve water.

Most resin adhesives work best at 70° F., and this temperature should be maintained, since most municipal water supplies are below this point.

A caution should be noted that resin glue mixtures tend to thicken at temperatures below 70° F. At 60° F the heavier viscosity of the mix may be misleading and may suggest undesirable changes in the formula, which might effect the conditions of hardening, either at room temperatures or in hot pressing. A minimum permissble temperature for glue spreading is about 65° F.

Q. 8. What is the proper lineal speed of passing veneers

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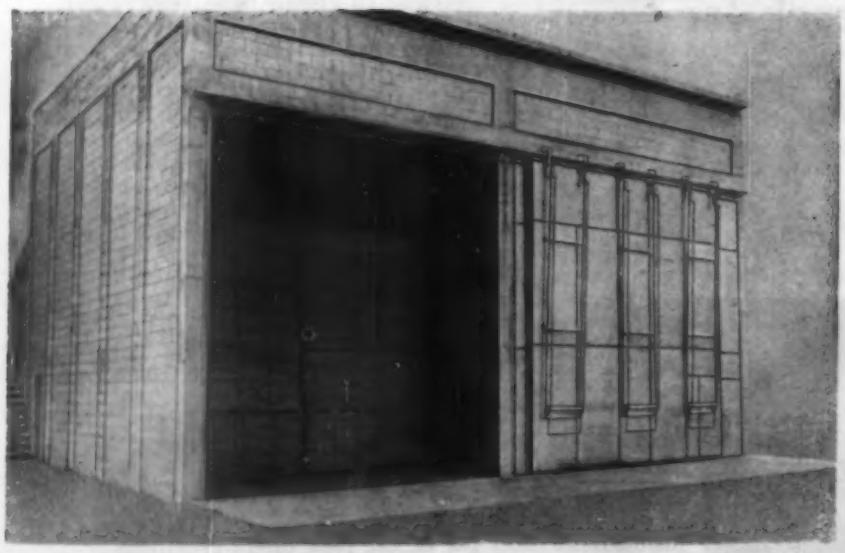

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through spreaders to obtain uniform spreads?

A. 8. The customary speed for hardwood veneers is from 70 to 80 lineal feet per minute, which is about as fast as an off bearer can handle the stock. In the softwood industry speeds as high as 200 lineal feet have been reported satisfactory. However, slower speeds than 70 to 80 are often desirable on thin or crinkly veneers. The relationship of R.P.M. to lineal speeds, for standard roller diameters of 8½" and 10½" are shown in the table. Variable speed attachments are a distinct advantage on spreaders and are recommended.

Table of Spreading Speeds for Glues

Diameter Rollers Inches	Circum. Rollers Feet	R.P.M. Spreader Rollers	Lineal Speed Feet per Minute
8.5	2.23	25	56
		30	67
		40	89
		50	111
		60	134
		70	156
10.5	2.75	20	55
		30	82
		40	110
		50	137
		60	165

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Q. 9. Do you recommend recirculating pumps for resin glues?

A. 9. The advantages of a recirculating pump for the glue mixture, which requires an intermediate reservoir between the mixer and the spreader, are that the viscosity of the mixture is maintained at a uniform point, and there is no need for the frequent opening and closing of the supply valve at each roller. Any surplus glue that drips down into the pan is automatically put back in circulation.

The disadvantage is that glue circulating pipes and pumps require frequent cleaning, immediately after closing down, to prevent clogging the pipes. All corner connections should be loosely plugged "T"s, rather than "L"s, to permit the use of cleaning rods to dislodge any glue that may have inadvertently clogged the equipment.

If water connections are supplied and the system thoroughly flushed out immediately after work hours, the piping can be kept in good condition. Delays in cleaning or flushing are bound to be troublesome.

All in all, recirculating the glue provides the most desirable feature of uniformity in the glue as it is spread. The extra cost and trouble is usually justified and a glue room crew, after one experience in unclogging pipes and pumps, is not likely to let it happen again!!

SPREAD: Determined by preparing a test sample 6 inches wide and 26½ inches long which shall be weighed immediately before spreading and immediately after spreading. With double spreading the number of grams applied multiplied by two will give the rate in pounds per 1,000 square feet of joint area.

OPEN ASSEMBLY: Time in minutes that an adhesive spread surface is exposed freely to the air in the laying up of an assembly.

CLOSED ASSEMBLY: Time in minutes that has elapsed after adhesive spread surfaces are laid together (brought in contact) until full pressure is applied.

CURING TIME: Period during which clamped assembly is held at curing temperature specified for a particular (qualified) adhesive determined at the innermost glue line.

CURING TEMPERATURE: If chamber temperature is recorded then this temperature must be correlated with required glue line temperature.

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Finishes

(Continued from page 31)

and appearance of fixtures markedly improved.

3. Gum-Wood Ranch Furniture: A more durable and better-appearing finish is now obtained with one less coat of lacquer. Air pressure 50 lbs.; temperature 160°F.

4. Bleacher Seats (Pine and Fir Wood): One coat of CTA over sealer replaced two to three coats of 27% "cold" spray material. A decided cost savings resulted.

5. Cedar Chests: Water White and Flat, CTA preferred because of better light resistance and easier rubbing.

6. Coffee Tables: One coat of CTA replaced two coats of 27% "cold" lacquer on close-grained wood. Stain and sealer used in both cases.

7. Drawing Tables (Oak): One coat of CTA replaced shellac sealer and two coats 27% "cold" lacquer on unfilled oak.

8. Gun Stocks: High solids 221-5B-N471—no reducer—hot sprayed at 11° F to ensure uniform application temperature—a carnauba wax lacquer having excellent abrasion, free of embrittlement.

9. Picture Frame Moulding: One coat of CTA replaced two coats of 21% "cold" both applied over Frenching operation and pigment wiping stain.

10. Pine Furniture: Formerly used sealer—light sand—lacquer—glass—two coats lacquer—rubbed with 4/0 steel wool. Now use CTA as follows: Sealer—good sand—glaze—one coat of CTA-rub with 4/0 steel wool. Saved two coats of lacquer and 46% of labor cost.

11. Rattan Furniture: One coat of sealer and one coat of CTA replaced one coat of sealer and one coat of varnish. There were no savings in cost of materials but a big improvement in appearance, durability, and speed of production. Air pressure, 40 lbs., temperature 160°F.

12. Store Fixtures: CTA Water White Clear preferred because of better light resistance to darker-colored "hot" material and a two-coat "cold" finish.

13. Television Cabinets: All operations were the same as "cold" application except that one top coat was eliminated. The stain and filler were reported to be clean and easy to work. The stain and filler was easy to maintain in suspension in the pot, was easy to pad and wipe, and showed no tendency to bleed. The sealer was sufficiently fast, and was reported easy to sand with excellent hold-out. The CTA lacquer showed mileage increase over "cold" lacquers (17 to 20 cabinets); eliminated one coat; was easier to apply than "Hot Spray" lacquers; was easier to rub, with much greater resistance to cut-throughs, and appearance was superior. Previously a 36% solids CTA had failed on a similar item, due to slower solvent release, trapped air, and slow rubbing. This shows the need to formulate "Hot Spray" finishes to individual requirements.

14. Upholstered Furniture: CTA has proved particularly successful for this industry, as lack of absorption permits full finish in one coat. Abrasion and perspiration resistance on arm rests and scuff resistance on feet vastly improved.

15. Wood Caskets, (walnut, mahogany, and cherry wood): No savings in material or labor cost but gained marked improvement in appearance.

16. Wooden Boxes: One coat of CTA lacquer enamel replaced two coats of "cold" lacquer enamel on soft wood. Air pressure 50 lbs., temperature 160°

17. Plywood Wardrobes: One coat each of CTA primer-surfacer and enamel replaced one coat primer-surfacer and three coats enamel. Appearance also improved. Air pressure 45 lbs., temperature 160°F.

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New York City, N. Y.—Progressive companies who offer solutions, and men of the wood industries who have problems, will be brought together at the Hotel Statler under the auspices of the American Society of Mechanical Engineers, Wood Industries Division, and the Northeast Section of the Forest Products Research Society.

Over 30 speakers, authors, moderators, recorders and discussion leaders will cover "Wood in the Home," including over-all topics of Preparation of Surfaces—Machining and Sanding; Finishing; and Trends in Home Construction from standpoints of Structure, Millwork, Flooring and Panels.

Following papers to be presented in each of these fields, the floor will be open to discussion. Here, the audience may raise questions regarding the papers, or pose additional ones.

For men who may feel that their particular problems or questions are too specialized to be raised from the floor, there will be the customary "small group" technical discussion periods where individualized attention can be given. Such meetings are scheduled for Materials Handling, Seasoning, Sawmilling, Plastics, Glues, and Finishing, with authorities as moderators in each instance.

Registration

Registration will open at the Hotel Statler, starting Dec. 3 at 7:30 P.M. and will continue from 9:00 to 10:00 A.M. on Dec. 4, and thereafter throughout the two-day program. Registration fees, as customary, will be modest, to encourage widest possible attendance. Because of the diverse interests of both of the Societies represented, covering wood technology in all its aspects from tree-growing to furniture finishing, non-members are strongly urged to attend and become better acquainted with the practical values obtained from these meetings.

Program

Thursday, December 4, 10:20 A.M.-12:30 P.M., Technical Session I.—Preparation of Surfaces.

Chairman, C. F. VanEpps, Stromberg Carlson Co., Rochester, N. Y.

"Control of Sunken Glue Joints" by Norvelle Huntley and A. H. Bishop, State University of N. Y., Syracuse, N.Y.

"Cutting Knife Problems" by L. A. Patronsky, University of Michigan, Ann Arbor, Mich.

"Contour Sanding" by P. F. DeSaix, The Carborundum Co., Niagara Falls, N. Y.

12:30 P.M.-2:30 P.M. Official F.P.R.S. Luncheon.

Guest speaker, John C. Taylor, Jr., Pres. American Homes, Inc., "Trends in House Construction."

2:45 P.M.-4:45 P.M., Technical Sessions II.—What's New in Surface Finishing.

Moderator, Frank T. Parrish, Heywood-Wakefield Co., Gardner, Mass.

"The General Finishing Picture" by Thomas B. Kelley, Lilly Varnish Co., Gardner, Mass.

"Alkyd Resins" by W. S. Robertson, E. I. du Pont de Nemours Co., Wilmington, Del.

"Lacquer Finishes" by J. R. Hollinger, Sherwin-Williams Co., Gibbsboro, N. J.

"New Developments in Finish Application."

7:00 P.M.-10:00 P.M. A.S.M.E. Dinner.

Friday, December 5, 9:30 A.M.-10:30 A.M., FPRS-N.E. Section Business Meeting.

10:30 A.M.-12:30 P.M., Technical Session III.—Home Construction.

Chairman, Allen Long, Weyerhauser Co., Newark, N. J.

"Trends in Structural Practice" by F. Powell Forbes, Campbell & Ives Co., Inc., New York City.

"New Aspects of Stock Millwork" by F. F. Beil, Curtis Companies, Inc., Clinton, Iowa.

"Improved Flooring" by G. F. Prange, Timber Engineering Co., Washington, D. C.

"Interior Wall Panels."

"The HB Beam System" by John M. Dennerlein, Dennerlein Associates, Queens Village, N. Y.

12:45 P.M.-1:45 P.M. Informal Group Luncheons

2:00 P.M.-5:00 P.M., Technical Discussion Groups.

"Materials Handling" by Paul Graham, Clinic of Wood, Manchester, N. H.

"Seasoning" by J. Harry Rich, Forestry Department, University of Mass., Amherst, Mass.

"Sawmilling" by Fred C. Simmons, Forest Utilization Service, N. E. Forest Experiment Station, Upper Darby, Pa.

"Plastics" by W. Burdette Wilkins, Consulting Engineer, Ridgewood, N. J.

"Glues" by C. F. MacLagan, Borden Company, Bainbridge, N. Y.

"Finishing" by Robert M. Dean, Jr., E. I. du Pont de Nemours Co., Philadelphia, Pa.

Upper Mississippi Valley Section Aiming For Dec. 9 Meeting at Wausau, Wis.

Chairman Thure C. Duvall, of the Wood Conversion Company, Cloquet, Minnesota, has announced the tentative program for the Annual Meeting of the Section.

The program is under the direction of Wm. A. Kleunder, Chicago & Northwestern Railway System, Saint Paul, and is planned for December 9 in Wausau. Exact details and place may be had by writing FPRS executive office, Box 2010, University Station, Madison, 5, Wisconsin.

The morning technical session will include papers on "Fire Retardant Veneer Doors," "Work of the Wisconsin Headquarters, Inc.," "Log Grading as it Affects Utilization," and "Log Handling," or "Treating of Lumber," by a staff member of the School of Forestry, University of Minnesota.

The afternoon will include the official luncheon, a national speaker, and a trip through the wood products division or wood handling system of a nearby integrated pulp and paper mill.

New officers for the coming year will be elected and installed at this meeting.

New Ohio Valley Section Inaugurated Oct. 2

LOUISVILLE, KY.—Over 50 interested persons in the Kentucky, Southern Indiana, Southern Ohio area met at the University of Louisville to officially open a new FPRS Section and to participate in a stimulating program covering "New Developments in Woodworking Tools and Equipment," and "Trends in Core Stock Manufacture."

The first Session, ably moderated by Mr. R. H. McMurtrie, President of the Huntingburg Furniture Co., Hunting-

burg, Indiana, got off to a practical discussion of the relative merits and application of alloys and carbides in woodworking plants.

Jack Fisher, U. S. Technical representative of the Deloro Smelting & Refining Co., Deloro, Ontario, Canada, described the properties of "Stellite," an alloy that is said to lose no hardness at high temperatures, outwears steel 5 to 10 times, and can be maintained with ordinary sharpening tools and methods. The alloy is particularly effective on hardwoods and imported woods containing high percentage of silica. It is only successful in applications at 30° or greater angle. Fisher stated that "Stellite is in between the carbide steels and regular steels in application. Cost is not as high as the former, and Stellite-tipped tools do not chip as readily as carbides."

Carbide Tools Up Production

Stating the case for carbides, Robert D. Brooks, Firth Sterling Steel & Carbide, Pittsburgh, emphasized the overall competitive task facing the woodworking industry today. In the face of competing materials such as plastics and non-ferrous metals which are striving to make inroads into wood markets, the wood products manufacturer has no substitute for his raw material, has an established and rising overhead, principally labor cost.

What's Ahead in Research

At the noon luncheon, Dr. J. Alfred Hall, Director of the U. S. Forest Products Laboratory, Madison, and FPRS Northcentral Regional Board Member, discussed the road ahead for research. Describing the effect of transportation on the decentralization of the U. S. housing industry, Hall emphasized that the per capita use of wood is currently above 350 lbs. per year and will continue to grow as the chemical utilization industries, principally, develop economically feasible by-products.

Looking ahead, Hall predicted: Fibreboard production will expand tremendously. Until the present, development has been largely dictated by equipment needs.

Five years from now research will dictate the equipment needs.

There will be a tremendous growth in composite constructions.

FPRS "Prexy" Attends

Others appearing on the program included FPRS President, Kenneth G. Chesley, Director of Research, Crosset Lumber Co., Crosset, Ark.; Charles Latimer, Quality Control Expert with the Nickey Bros., Memphis, Tenn., who presented a paper on Veneer Splicers; Mr. C. D. Dosker, President of Gamble Bros., Louisville, Ky., and moderator for the afternoon session; S. W. Anderson, V.P., Anderson Woodworking Co., Louisville, who spoke on Economics of Lumber Core Manufacture; Richard L. Burkhart, President of Swain Lumber Industries, Inc., Seymour, Indiana, who presented, "Substitute Cores for Furniture Stock," and Dr. H. O. Fleischer, U. S. Forest Products Laboratory, Madison, Wis., who discussed Veneer Log Heating Methods.

Officers Elected

At the business meeting, the new Section adopted a By-laws and elected its first set of permanent officers. Robert Allen of the National Casein Co., New Albany, Ind., was named Chairman. Other officers named were: Vice-chairman, Hal Moser of Gamble Bros., Louisville; secretary, Richard Burkhart of Swain Industries, Seymour, Ind.; treasurer, Carl Trinkle of Baldwin Piano Co., Cincinnati; trustees, Peter Garratt of Gamble Brothers, and D. B. Frampton, Jr., of Frampton Lumber Interests, Columbus, Ohio.

HOW

Weyerhaeuser Wood Parts SERVE ROBBINS Incubators

Manufacturers of a wide variety of industrial products have found Weyerhaeuser a dependable supplier of economical wood parts.

The Robbins Incubator Company of Denver, a leader in the field of commercial incubators, uses wood parts fabricated by Weyerhaeuser to meet Robbins' high standards of construction.

To help speed the manufacture of trays and racks for Robbins Incubators, nearly thirty different wood parts are fabricated by Weyerhaeuser in various shapes and sizes to exact specifications. The Robbins Company receives wood parts of the right texture, cut from Western Pines which are light in weight and which work well in their nailing and gluing operations.

Weyerhaeuser's fabricating facilities permit economical mass production of partially or completely fabricated wood parts. This fabrication results in greater efficiency of operation for users of wood parts—as well as higher product uniformity.

Your inquiry listing detailed specifications will bring you complete information on how we can serve you.

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Industrial Wood Parts Department

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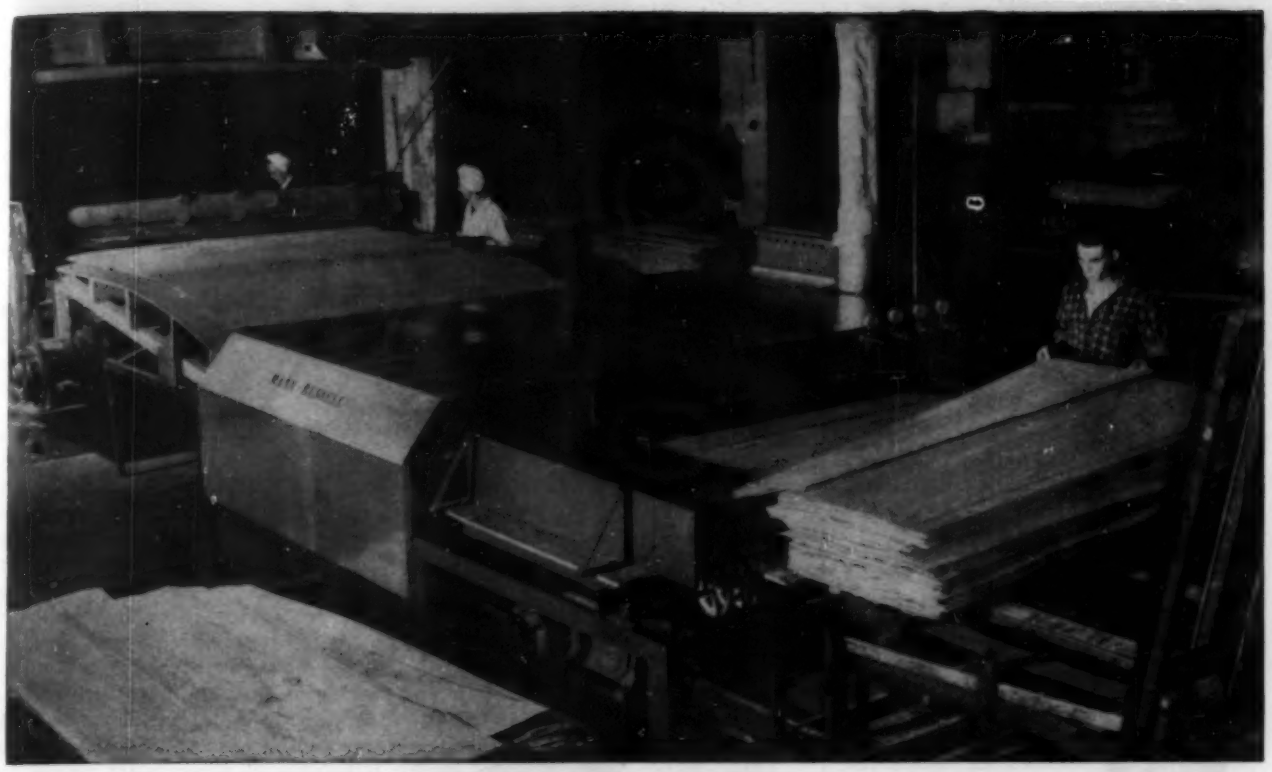

At Last! The Continuous *Flat-Plane* 100-Inch Electronic Veneer Edge-Gluer!

1. Speeds up to 30 lineal feet per minute. (Higher speeds on special order)
2. Perfect edge-register of joints. (First edge-gluer built on a flat plane!)
3. Superior to heated-drum type because:

   No surface heat is applied; no change of moisture content; no scorched surfaces; no stored heat.

   Gluing takes place while web is in flat plane; not curved . . . not stressed, internally!

   Locked-in stresses between panels are eliminated.

   Glue-line is solid-set throughout . . . evenly cured on both faces of the stock.

   Glue squeeze-out is solid-set; sheets may be used immediately, in production.

YEARS of development and experimental work—in the Mann-Russell laboratories and at the University of Washington Forestry School—culminate in this, the first successful continuous flat-plane veneer edge-gluer. It combines a new mechanical V-belt drive, electronic high-frequency heat, and Mann-Russell "Parallel Bonding"* to produce an endless strip of random-width edge-glued veneer. Check the features!

Equipment available in any width for any wood thickness from 1/16th inch to 8 quarter. To speed your production through modern high-frequency gluing, write, wire or contact the pioneers in electronic applications for the wood-working field:

Northwest Syndicate, Inc.
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HOME OF

Mann-Russell Electronics

* Licensed under Parallel Bonding process patents No. 2,434,573 and 2,457,498. Patents pending on flat-plane veneer edge-gluer.

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Laminating

(Continued from page 33)

of not less than 1800 psi with an accompanying wood failure of 75 per cent or greater. In Douglas fir the minimum averages permitted are 1050 psi and 75 per cent wood failure.

If the average values for any given test are below the foregoing figures, then, depending on the discretion of the local inspectors, it is possible to submit an additional sample for retest. The acceptance or rejection of laminated members is not a function of the testing laboratories, but rather the responsibility of the Naval inspector supervising the laminator's operation.

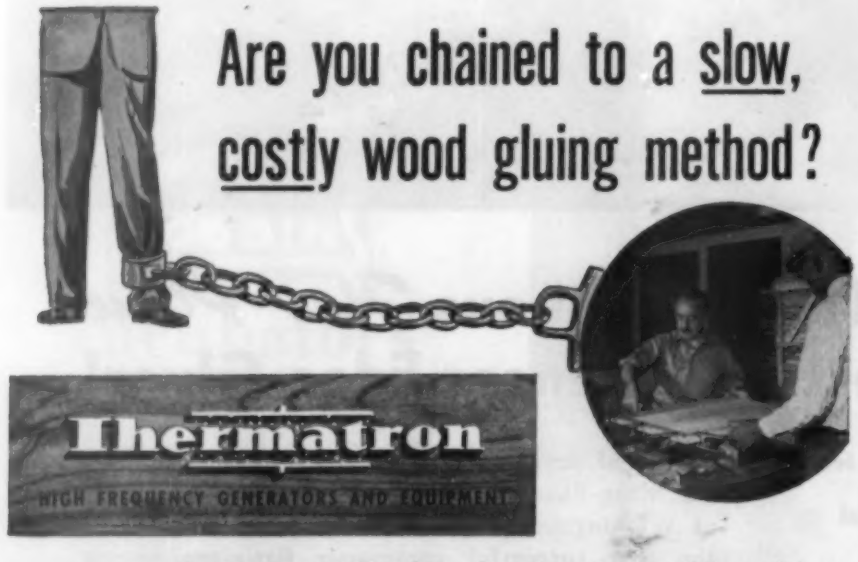
The specification requirements for the delamination tests are such that if delamination of a particular member is 10 per cent or below, it is considered acceptable. If the delamination is above this figure, then the member is subject to rejection. Again, depending on the discretion of the local inspector, a sample can be submitted for retest and it is the policy of the Bureau of Ships to accept the best value obtained in any of the tests. The reason for this acceptance is that in some instances the ability of the sample to pass specifications satisfactorily depends on its location in the laminated member. What this means specifically is that if insufficient material was provided at the end of a laminated member to obtain an adequate sample, it is possible that the first sample submitted for test may not be truly representative of the quality which is prevalent in the remainder of the member. Thus, the retest on a sample taken further into the member may be a more truly representative measure of the quality of laminating obtained.

A sample of the Bureau of Ships' form on which all the pertinent data have been included, is shown in Figure 1. It should be noted that, in addition to the actual test results, these forms have provision for reporting important phases of the laminating procedures. The purpose of including this information is to maintain a record of the gluing procedures which were used in preparing the sample. In the event that the tests were not satisfactory, this information is helpful in determining causes for failure.

In order for a test to be official it is necessary that the first part of the form be signed by a resident inspector and that responsible individuals from the testing laboratory sign the second portion of the form which, in effect, shows that the test results are accurate representation of the tests which were performed.

The principal testing program is being carried out in accordance with the foregoing procedure. Local testing is particularly useful in those plants where edge-glued stock is being prepared for subsequent lamination into structural members. Simplified testing machines have been constructed in many of these plants and the local inspector can sample the product and obtain block shear strength with a minimum of time lag. This localized testing program concerns itself exclusively with block shear strength tests and not with delamination tests.

Because of the importance of this quality control program it is imperative that the equipment and personnel used in the testing be of the highest possible calibre. Men who have had experience in adhesive and testing work are best equipped to do this job and they must have organizational ability to maintain the schedules that are necessary to prevent production from bogging down. In addition, they must exercise great care in maintaining high standards of measurement.



. . . For Permanent Wood Bonding in a Matter of Seconds!

Seen in the jig is an entire cabinet assembly to be glue-set electronically by THERMATRON in only 30 seconds. The bond is stronger than the wood itself by actual test! Hidden in the background is the 3 KW generator which masterminds this job.

The saving to you in time, labor, floor space and expensive veneers is immeasurable . . . And the bonds produced are stronger than the wood itself. Costly clamps and clamping time are eliminated, and there are far less rejects.

THERMATRON supplies the complete installation, including generators and jigs, under one contract and one responsibility. The immediate production savings THERMATRON brings you are often more than the initial installation cost.

Write us today for complete details about your bonding problem . . . We'll be glad to offer guidance without obligation. And ask us for our instructive bulletin No. w-10.

HIGH FREQUENCY GENERATORS AND EQUIPMENT FOR ELECTRONIC GLUE DRYING • BENDING • EDGE GLUING • VENEER BONDING

Standard stock generators available from 500 Watt to 20 KW output, operating on 110 or 220 volt lines. Larger size generators up to 100 KW can be supplied for larger requirements.

*T. M. Reg. U. S. Pat. Off.

Thermatron* equipment

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For all-purpose duty—

TAG MOISTURONIC METER

Here's the truly *all-purpose* moisture meter—Tag Model 8008—the meter that measures up to 150% wood moisture on a direct reading scale. It's dependable, of course—like all Tag and Weston instruments. It's as easy to operate as top-rank engineering intelligence has been able to make it. It weighs only about 10 pounds—has a sturdy, comfortable carrying strap. Fine quality in appearance as well as performance. Both battery and A-C types. Write today for Bulletin TT10 giving full description and technical details.

For utmost portability—

TAG MIDGET MOISTURE METER

The Tag Midget Moisture Meter brings new convenience to moisture testing. Extremely compact, it weighs less than 4 pounds—yet it provides true Weston-Tag accuracy and dependability. Operates on standard dry cell. Instantly indicates per cent moisture. Is calibrated for wood and plastic; can also be adapted for other materials. For details, write for Bulletin 1295. 65

TAG TAGLIABUE INSTRUMENTS DIVISION WESTON

WESTON ELECTRICAL INSTRUMENT CORPORATION

617 Frelinghuysen Avenue, Newark 5, New Jersey

"TAG" Automatic Controllers Record Temperature, Pressure

Pressure, vacuum or temperature can be automatically regulated and recorded with the Pneumatic Recorder-Controllers produced by TAGliabue Instruments Div., Dept. 67, Weston Electrical Instrument Corp., Newark 5, N. J. These devices maintain conditions for which they are set by varying control line air pressure, which operates a diaphragm valve to regulate flow of fluid (gas, steam, liquid) to the equipment being controlled. At the same time, the instrument continuously records actual temperature or pressure on a circular chart.

Operating on an air supply of 18 p.s.i., TAG Recorder-Controllers handle temperatures between —100°F. and 1000°F., vacuum as great as 30" mercury, or pressures up to 7500 p.s.i.

"TAG" Glass Thermometers Provide Lasting Precision

Accurate general purpose and laboratory thermometers are supplied by TAGliabue Instruments Div., Dept. 67, Weston Electrical Instrument Corp., Newark 5, N. J. Available armored or unarmored, these individually etched stem thermometers indicate temperatures as low as —150° or as high as 950°F. in the standard grade, and values as low as —30°F. or as high as 750°F. in the extreme precision grade. Limited range thermometers graduated to 1/100°C., for calorimeter use, are also standard.

In addition to individual instruments, matched sets of A.S.T.M. Testing Thermometers, with overlapping ranges spanning temperatures from —36°F. to 760°F., or —38 to 405°C., are available in convenient simulated leather cases.

Weston Metal Thermometers Combine Precision, Stamina

Accurate, reliable temperature indication is given by the all-metal Thermometers manufactured by Weston Electrical Instrument Corp., Newark 5, N. J. These sturdy instruments are designed for utmost legibility and are constructed for use under severe operating conditions.

Weston All-Metal Thermometers can be supplied with the stem projecting from the back or from the bottom, top or side at any angle. Stem lengths from 2½" to 24" are standard; stems as long as 72" are available. A 3" dia. head provides a scale 6" long. Temperatures as low as —100°F. or as high as 1000°F. can be indicated. The "Max-Min" type records highest or lowest temperature since resetting. Contact making type closes an electrical circuit at an easily set value. Special models are also available.

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50 Foxboro Kiln Controllers in continuous use for 22 years

Ever since 1929, fifty Foxboro Kiln Controllers have been maintaining precise drying schedules in fifty 104-foot dry kilns at Weyerhaeuser Timber Co., Longview, Wash. And they are still serving dependably today!

Such complete accuracy and reliability over long periods of time is the reason why so many leading kiln operators prefer Foxboro. In more than 3000 installations, Foxboro Kiln Controllers are now demonstrating their superiority in eliminating degrade losses and giving faster, safer drying.

Application Engineering Data Sheet 240-3 will help you plan top-efficiency kiln control. Write for it. **The Foxboro Company, 1311 Norfolk St., Foxboro, Mass., U.S.A.**

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Out in the Shop

Wood and Wood Products will pay $5.00 for each published Out in the Shop item submitted by readers. Items must be practical—helping to do a job better and easier. Clear photo and short explanation necessary. The Editors.

Trimmer unit uses standard lathe for base

To trim off flash left in molding croquet balls, engineers of the Norman Parke Co., Chicopee, Mass., designed a special high production trimming machine using a standard Delta 11" lathe as the basic unit. Producers of croquet balls and shuffle-board discs from compressed birch sawdust, the company manufactures these articles at about half the cost of the same products in hardwood.

The flash, left on the molded croquet ball where the two halves come together, is trimmed off and smoothed down on the lathe which is equipped with a special ball-holding device. Ball and holder are forced against the lathe's turning center by the holding center which is moved by a 2½" air cylinder operating under 175 psi. The operation is illustrated in the attached photo.

Proper air pressure cuts operating costs

It's worth while to have a needle gauge handy for occasional tests of air line pressure where air driven tools and motors are used. Tests show that a drop in air line pressure from 90 psig. to 70 psig. can drop production output as much as 35 percent for air driven tools. Air driven motors will lose 25 percent of capacity with the same drop in line pressure. Losses frequently occur through a series of individual, small leaks which appear inconsequential when considered separately.

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Engineered for DOORS and other parts of TV CABINETS - STORE FIXTURES - FURNITURE that requires practically WARP PROOF plywood

Does BAL-CO-PLY cure all warpage troubles?

No! Not entirely, but BAL-CO-PLY comes closer to doing so than any other known method.

Some of us, in this organization have been making Plywood for better than 50 years. We should know some tricks and we do. Not tricks exactly, but methods of making Plywood with a lot of care and a different new technique that makes BAL-CO-PLY more suitable for jobs that require nearly WARP PROOF plywood.

THE COST:

The cost is a little more than any other hardwood plywood made by other reputable manufacturers. Minimum prices may be had when lots of 100 of size and kind are ordered and in quantities of truck and carload. Prices are higher on smaller orders that also require crating.

PEARL CITY PLYWOOD CORPORATION

Division of Jamestown Veneer and Plywood Corporation

Jamestown, N. Y.

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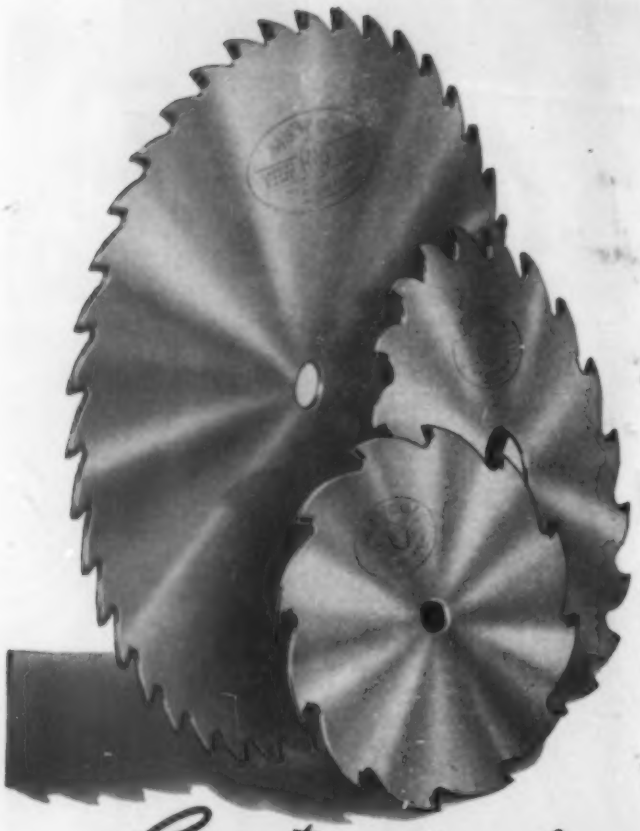

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...FOR TUNGSTEN CARBIDE

☆ MEYCO carbide tipped circular saws ARE DIFFERENT, because the blade and tooth design have been engineered for tungsten carbide teeth. It is this know-how of building a carbide tipped saw from the ground up, that has made MEYCO saws popular and accepted as the standard of the industry. MEYCO saws will last longer, produce smoother cuts and save you many times their small extra cost over ordinary circular saws.

☆

Inquire, too, about the exclusive MEYCO "Vibra-Free"* development . . . the locked in dampers that eliminate excessive noise and vibration in carbide tipped circular saws. VIBRA-FREE* MEYCO saws are made so the stresses and strains, inherent in every saw blade, are more evenly distributed—producing still smoother cuts and longer life. Write for fully descriptive catalog and price list No. 27.

*PATENTED

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Patent Digest

by Royden C. Rinker

Wood Fastener

G. J. Soderberg and T. Packard (to E. B. Packard). U. S. 2,596,181, May 13. Fastener for attaching two wooden members along a joint comprising a rigid L-shaped body, a central tooth and two end teeth.

Wall Structure

K. T. Nystrom (to Standard Railway Equipment Manufacturing Co.). U. S. 2,596,280, May 13. A wall covering comprising boards having abutting edges, the edge of one being rabbeted to provide a surface extending normal to the edge; a cover comprising a metallic sheet overlying one board; said sheet having a flange extending normal thereto and overlapping the edge of said one board and having spaced apertures therein below said surface and another sheet overlying an adjacent board and having a flange extending normal thereto and overlapping the edge of the adjacent board, said flange having spaced outwardly projecting parts passing through the apertures and extending under engaging the surface of the first mentioned board.

Woodworking Machines

O. T. Hinton, Jr., U. S. 2,596,402, May 13. Motion producing mechanism, comprising a support, a rectangular group of shafts rotatably mounted thereon, driving means mounted upon adjacent ends of the shafts so that all may rotate in unison, means for driving one shaft, opposed pairs of cams secured to the shaft for rotation therewith, the cams of each pair having blocks and elements to engage the cam grooves and connecting rods.

Log Turner

I. L. Hale. U. S. 2,597,319, May 20. Log turner comprising a frame, a power shaft, a guide, a turner bar, means for reciprocating the turner bar, and means for locking while shifting a log.

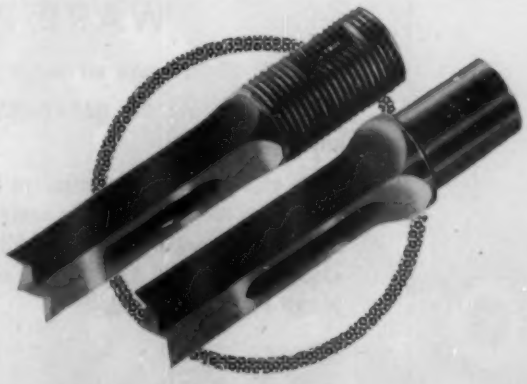
Power Saw

R. T. Spedding (to Dearborn Motors Corp.). U. S. 2,597,396, May 20. Saw for use with a tractor comprising a frame adapted for securement to the rear of the tractor, a carriage mounted for linear movement in work engaging and disengaging, a saw blade journaled on the carriage, and power-take-off from the tractor for actuating.

Woodworking Machine

W. I. Stearns. U. S. 2,597,397, May 20. Woodworking machine having a housing with spaced opposite end walls provided with aligned openings and slots for re-

Smooth Mortising
with
Wysong & Miles HOLLOW CHISELS



For fast, accurate Mortising, specify quick cleaning, precision made, Wysong and Miles Hollow Chisels. Smooth or Threaded shank. Prompt delivery on popular sizes.

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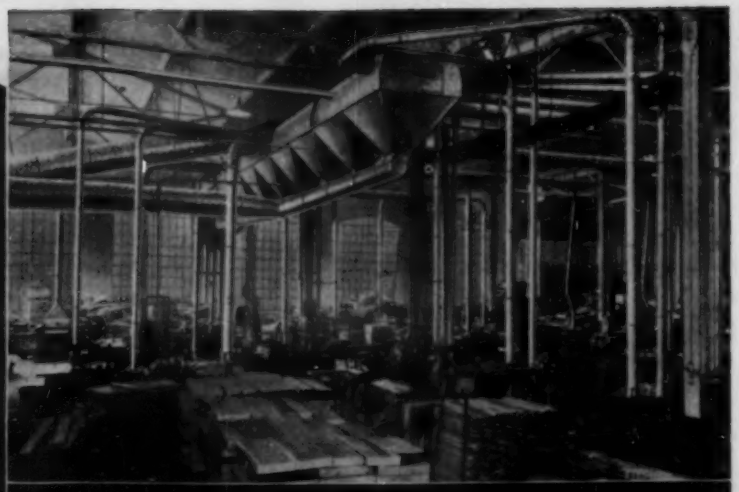
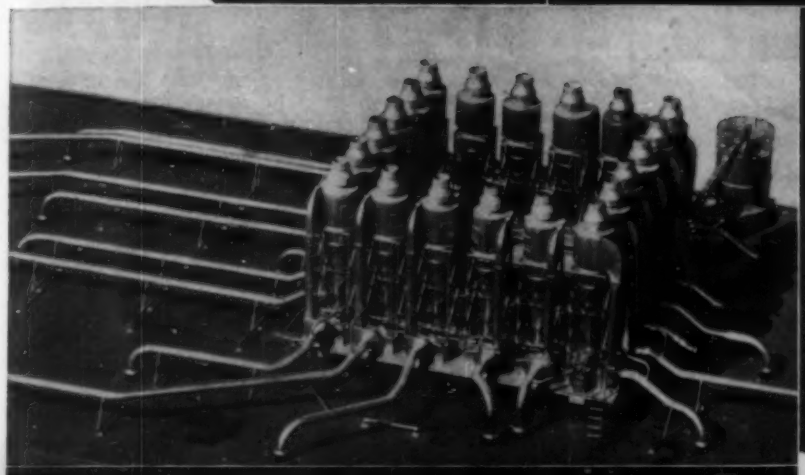
clean air the INVISIBLE tool...



TOY MANUFACTURER: Plenum Main System

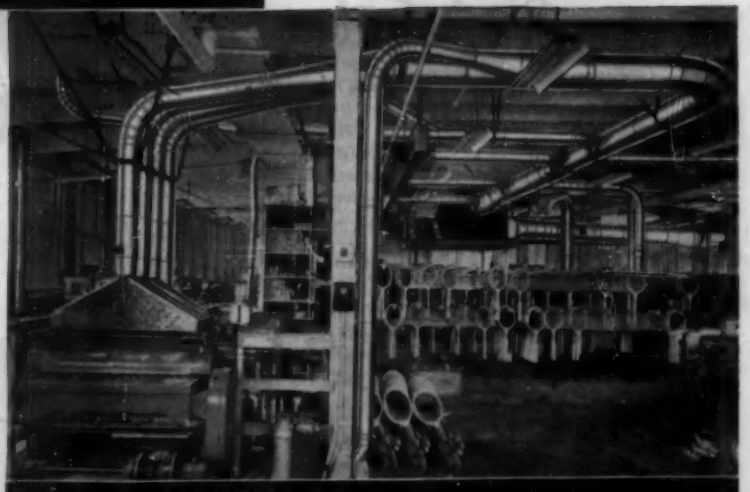


PLASTICS MANUFACTURER: Exterior View of Installation

...in leading woodworking plants!

Wherever you find woodworking equipment, chances are you'll find KIRK & BLUM Dust Collecting Systems. And, whether it's the Plenum Main type of system, exclusive Kirk & Blum development, or the streamlined Tapered Main system, you'll find "clean air... the INVISIBLE tool" increasing production and improving working conditions.

An old dust collecting system may be wasting substantial amounts of power, limiting production and handicapping operation in your plant. In more than 45 years of experience, Kirk & Blum Engineers have gained skill that can be used effectively in your plant... large or small. Call in a Kirk & Blum Engineer for a no-obligation survey.



SPORTS EQUIPMENT: Tapered Main System

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We specialize in beech, for its superior bending qualities and fine close grain. It has about the same weight and tensile strength as oak, and can frequently be used in place of other woods or shaped metal parts. It finishes well in imitation maple, mahogany or walnut colors.

Stock is surfaced on four sides, ends trimmed, length and cross dimensions sufficient for your milling to net finished size. No special millwork such as shaping, boring, sanding, can be provided.

WRITE FOR DETAILS

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The METROPOLIS BENDING COMPANY

DEPARTMENT C METROPOLIS, ILLINOIS

ceiving shaft ends extending upwardly in said end walls into said openings and antifriction bearings for said shaft ends.

Pine Gum

L. A. Goldblatt, N. C. McConnell, and H. B. Summers (to United States of America). U. S. 2,598,684, June 3. Vaporizing the turpentine in pine gum with heat and steam, passing the vapor stream through glass fibers and condensing.

Photograph Records

G. F. Metz (to Shawinigan Products Corp.). U. S. 2,599,570, June 10. Composition of polyvinyl acetal resin and hydrocarbon-insoluble pinewood extract.

Wood Pulping

H. Miller (to Watervliet Paper Co.). U. S. 2,599,571. June 10. Impregnating deciduous wood chips with sodium carbonate or sodium hydroxide solution in a closed vessel, introducing steam, venting occasionally to release air, drawing off excess solution, immersing in lime suspension and cooking further to render the fibers mechanically separable.

Propeller

M. M. Munk. U. S. 2,599,718, June 10. Radial wooden propeller blade composed of grained laminations disposed at right angles to the axis, all grains being disposed so that the blade will diminish its pitch in response to an increase in thrust load.

Sawing Machine

V. V. Weyant (to Yoder Co.). U. S. 2,596,630, May 13. An automatic function device for use in performing repetitive operations on a continuous basis.

Lacrosse Stick

B. N. Frisch (to G. R. Auer). U. S. 2,596,894, May 13. A laminated lacrosse stick.

Power Saw

A. R. McKinstry (to Kut-Kwik Tool). U. S. 2,597,017, May 20. Portable power saw for cutting timber.

Timber Setting Machine

J. D. A. Morrow (to Joy Manufacturing Co.). U. S. 2,597,686, May 20. A portable body, a timber saddle and elevating means to bring a timber against a mine roof.

Lignocellulose Pulping

J. H. Fisher and B. R. Mead (to Ontario Paper Co.). U. S. 2,601,110, June 17. Digesting lignocellulose under autogenous pressure with aqueous sodium aluminate.

Panel

C. B. Hemming and R. L. Overhoff (to United States Plywood Corp.). U. S. 2,601,284, June 24. Low pressure laminate of wood-base, metal sheet, wood veneer bonded with polyvinyl butyral-phenolic adhesive.

The Right Glue for the Job...

For High Grade VENEER

NCC No. 1012 Casein or NCC Liquid Resin Glue

- Non-stain
- Non-abrasive
- Stronger than the wood
- Rapid setting
- Economical
- Easily cleaned from mixer and spreader

NCC No. 1012 Casein Glue is moisture resistant. Has two-day working life. Can be used at any temperature above freezing.

NCC Liquid Resin Glue is waterproof. Is available in the catalyst to meet your need. Can be used at any temperature above 70°.

Glues for all types of woodworking. Sash and door, joint work, millwork, corestock, doweling, bending, plywood, dimension stock. Outline your problem. No cost or obligation to purchase.

National Casein COMPANY

No Glue Problem—Casein or Resin—is too Little, too Big, or too Tough!

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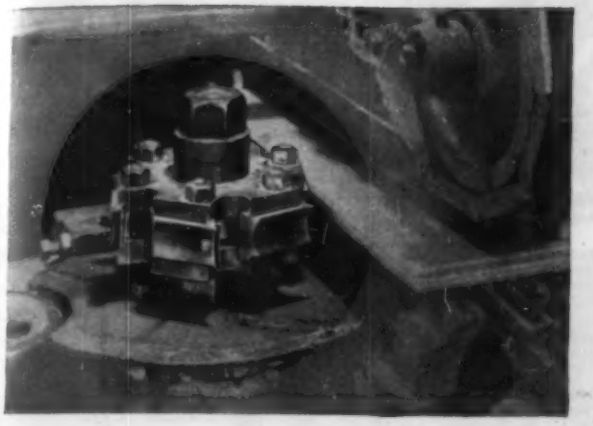
How to apply carbides to woodworking tools



9400 MORE PIECES PER GRIND

Sizing tops and rounding corners of 7-ply desk surfaces, steel cutters averaged 600 pieces per grind. Now, carbide-tipped cutters yield up to 10,000 pieces per grind — at a higher speed. Boost *your* production! Send coupon for information on *free* Carboloy services.

FREE CARBOLOY SERVICES

Woodworking Specialists

Show when, where to use carbides for increased production, better finishes, lower costs; how to sharpen and maintain carbides for less downtime. Check coupon.

Technical Data

Comprehensive, step-by-step information on maintenance and operating practices for tungsten carbide tools. Send coupon at right for Technical Bulletin GT-206A.

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Trains your key men in carbide practices through shop work, tips, teaching. Get full information by sending coupon at right for Booklet GT-197.

"Carboloy" is the registered trademark for the products of Carboloy Department of General Electric Company

CARBOLOY

DEPARTMENT OF GENERAL ELECTRIC COMPANY

11103 East 8 Mile Ave., Detroit 32, Michigan

Carboloy Service Program helps you up production, cut downtime, get top carbide benefits through application of Carboloy Cemented Carbides to your woodworking tools.

Want a sure answer to soaring production costs?

Carboloy Cemented Carbides, as opposed to high-speed or high-carbon steels, will sensationally multiply the number of pieces produced per tool... particularly in highly abrasive types of wood and wood products. This parallels the manner in which cemented tungsten carbides have completely revolutionized the metal-cutting and -forming industries in the past 20 years.

Carboloy services, based on experience, include engineering advice, technical data, in-plant and out-plant training. They show how easily Carboloy Cemented Carbides can be applied to the tips of saws, router bits, sticker knives, moulder heads. They show why carbides permit operation at higher speeds, stay sharp longer, cut cooler and often eliminate sanding and polishing operations.

Although the Carboloy organization does not make woodworking tools, it supplies metal to tool makers and makes service helps available to the entire woodworking industry.

Take advantage of these services. Send the coupon today!

Outlasts Steel Knives 30 to 1

Steel knives on a glue line job dulled in two days. Carbide-tipped moulder head (at right) lasted over two months! Let the skill of carbide experts help *your* woodworking operation — use *free* Carboloy services.

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- ☐ Carboloy Field Engineer
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- ☐ Technical Bulletin GT-206A

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If you manufacture Wood Turnings your firm name should be listed on this page. The cost is nominal. For further information write today: WOOD AND WOOD PRODUCTS, **139 N. Clark, Chicago 2, Ill.**

Management

(Continued from page 38)

It was the practice at this plant (which produces a special type of cabinet) to cut boards to size and then move them to the finisher. The operator there would reject knotty or poorly grained boards before beginning work.

This operation was costly, slow, and unpredictable, since the operator might find the first board acceptable or might reject ten or fifteen knotty ones. The time wasted in selecting a board, examining it, and rejecting it—all done by a highly paid wood-working operator—was considerable. Industrial engineering analysis showed that this pre-check needed to be done, but *not* at that precise minute.

This problem was solved by installing a separate pre-inspection station where one employee checked all incoming boards for all finishing operators. Operators were then able to use one board after another rapidly and without preliminary checking, since they had been relieved of responsibility for pre-inspection. One central checker thus paid his way many times by raising output for the entire shop.

Even more important, it raised another question which this company is currently investigating for a possible increase in yield and a saving in material cost. With a centralized checking and selection station, the posibilities of cutting to yield instead of to size and then selecting size and quality and thereby reducing waste became apparent.

In the same way, one careful check of all shop operations and methods may reveal many hidden dollars in extra cost, unnecessary waste, or slower production. Few industries today are such a fertile field for careful methods analysis as the woodworking or wood products plant. Methods must be aimed at increasing the percentage of productive time of the operator, the reduction of material handling, the reduction of soap and rework and the increase of yield from our costly raw material—wood!

A Wood Trading Post AD will find Men—Materials—Machinery

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RANGE: Catalin offers a complete range of Urea, Phenolic and Resorcinol resin glues for all types of hot and cold press operations.

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TECHNICAL ASSISTANCE: The basic resins as developed and produced by Catalin, satisfy most wood glueing applications—with little or no modification. Where working conditions and product specifications demand special adhesive qualities, Catalin technicians will welcome the opportunity to compound special formulas and assist in determining production procedures for improved quality and efficiency. Inquiries invited!

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Markets

These prices are estimates made available by Mr. George Land, publisher of the *Hardwood Market Report*, and reflect prices as indicated in his copyrighted issue of October 4, 1952. Mr. Land's complete report is available weekly; those who want the entire list should contact him c/o Box 5716, Memphis 4, Tenn.

Note: For your convenience each price change is marked by an asterisk (*).

SOUTHERN HARDWOODS

F.O.B. mills—Texas & Louisiana area—estimate of present FOB Texas & Louisiana mill point average ceiling price sales made subsequent to January 25, 1951 to consuming trade on band-sawn Southern Hardwoods in carload quantities, random widths & lengths, rough air dried & graded in accordance with NHLA rules on inspection. Prices in dollars per M', on straight cars of upper bracket grades premiums are frequently being paid.

ASH—FIRM TEXTURE

	FAS	No. 1C	No. 2C
4/4-in.	155	110	62
6/4-in.	170	120	67
8/4-in.	180	140	70

BASSWOOD

4/4-in.	160	125	80
6/4-in.	170	135	87
8/4-in.	180	145	90

BEECH

4/4-in.	125	100	55
6/4-in.	140	110	60
8/4-in.	167	127	72

CHERRY

Same as Appalachian

RED GUM—PLAIN

	FAS	No. 1C	No. 2C
4/4-in.	200	150	70
6/4-in.	230	170	75

RED GUM—QUARTERED

4/4-in.	220	165	75
6/4-in.	250	190	90
8/4-in.	260	200	95

SAP GUM—PLAIN

4/4-in.	105	85	42*
6/4-in.	122	102	45
8/4-in.	160	140	

HACKBERRY

4/4-in.	110	90	60
6/4-in.	120	100	70
8/4-in.	135	110	75

SOFT MAPLE—WHAD

4/4-in.	130	110	67
6/4-in.	145	120	77
8/4-in.	165	125	80

SOFT MAPLE—WHND

4/4-in.	115	90	60
6/4-in.	130	105	75
8/4-in.	135	110	80

RED OAK—PLAIN

4/4-in.	175*	100	61
6/4-in.	190	135	
8/4-in.	200	140	

WHITE OAK—PLAIN

4/4-in.	180	115	62
6/4-in.	200*	140	
8/4-in.	205	145	

PECAN

4/4-in.	110	90	40
6/4-in.	130	110	60
8/4-in.	155	130	65

POPLAR—PLAIN

	FAS	S & S	No. 1C
4/4-in.	165	155	125
6/4-in.	185	175	140
8/4-in.	205	195	150

SYCAMORE—PLAIN

	FAS	No. 1C	No. 2C
4/4-in.	115	95	60
6/4-in.	125	105	60

TUPELO— PLAIN

TUF TEXTURE—DEEP SWAMP

4/4-in.	105	85	40
6/4-in.	122	102	45
8/4-in.	160	140	

WILLOW

4/4-in.	130	110	60
6/4-in.	142	122	67
8/4-in.	150	125	70

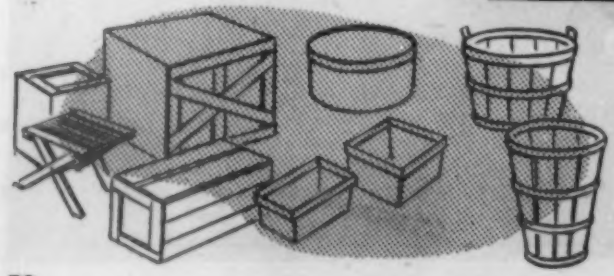
APPALACHIAN HARDWOODS

F.O.B. mills—Johnson City, Tennessee area—estimate of present FOB Appalachian mill point average ceiling price sales made subsequent to January 25, 1951 to consuming trade of band-sawn Appalachian hardwood in carload quantity, random widths & lengths, rough air dried & graded in accordance with

*75 Years of Stapling Machinery Experience

Proof today! as it was yesterday . . . ST. JOE Stapling machinery continues to solve hundreds of fastening problems, in many types of industries — through greater speed, greater economy, and greater efficiency.

Here's evidence that merits your consideration on that next fastening job! Write today.



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St. Joe Machines, Inc.

ST. JOSEPH, MICHIGAN

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NHLA rules of inspection. Prices in dollars per M'. on straight cars of upper bracket grades, premiums are frequently being paid. Basis selected for the purpose of indicating transportation costs to principal consuming markets from Johnson City, Tennessee area.

TOUGH ASH	FAS	FIF	No. 1C	No. 2C
4/4-in.	160	150	110	67
6/4-in.	180	170	122	72
8/4-in.	190	180	147	85

BASSWOOD				No. 2A
4/4-in.	180	170	130	80
6/4-in.	190	180	137	94
8/4-in.	195	185	147	96

BEECH				No. 2C
4/4-in.	145	135	110	65
6/4-in.	160	150	120	75
8/4-in.	170	160	130	80

BIRCH				
4/4-in.	230	220	150	80
6/4-in.	245	235	160	85
8/4-in.	250	240	165	90

BUCKEYE				
4/4-in.	135	125	100	65
6/4-in.	160	150	115	73
8/4-in.	165	155	120	78

CHERRY				
4/4-in.	220	210	150	90
6/4-in.	240	230	170	95
8/4-in.	250	240	180	100

CHESTNUT	FAS	No. 1C	FAS WHND	1C & B WHND
4/4-in.	165	115	135	125
6/4-in.	170	120	140	130
8/4-in.	175	125	150	140

HICKORY	FAS	FIF	No. 1C	No. 2C
4/4-in.	125	115	78	53
6/4-in.	145	135	86	58
8/4-in.	165	155	90	60

HARD MAPLE				
4/4-in.	190	180	125	80
6/4-in.	200	190	135	84
8/4-in.	205	195	145	90

SOFT MAPLE				
4/4-in.	160	150	115	67
6/4-in.	170	160	125	69
8/4-in.	175	165	130	72

RED OAK—PLAIN			
4/4-in.	185	175	120
6/4-in.	200	190	135
8/4-in.	215	205	145

WHITE OAK—PLAIN			
4/4-in.	200	190	125
6/4-in.	220	210	145
8/4-in.	225	215	155

WHITE OAK—WHND	FAS	FIF	C & B	No. 1C
4/4-in.	115	105	90	85
6/4-in.	140	130	120	110
8/4-in.	150	140	125	115

YELLOW POLAR—PLAIN	FAS	FIF	No. 1C	No. 2A
4/4-in.	210	200	135	80
6/4-in.	215	205	145*	93
8/4-in.	225	215	155	..

POPLAR SQUARES	FAS	No. 1C & 8D
4x4-in.	245	175
6x6-in.	280	190
8x8-in.	340	240

WALNUT—STEAM TREATED	FAS 6' & up	FIF 6' & up	No. 1C	No. 2C
4/4-in.	350	305	185	80
6/4-in.	370	325	210	95
8/4-in.	385	340	235	100

Walnut list reflects average fob mill, all areas. Basing point not generally observed.

NORTHERN HARDWOODS

Estimate of present FOB Wausau, Wisconsin mill point average ceiling price sales made subsequent to January 25, 1951 to consuming trade on band-sawn Northern hardwoods in carload quantities random widths & lengths, rough air dried & graded in accordance with NHLA rules on inspection. Prices in dollars per M'. on straight cars of upper bracket grades, premiums are frequently being paid.

BROWN ASH	FAS	No. 1C	No. 2C
4/4-in.	145	105	73
6/4-in.	155	120	83
8/4-in.	160	130	88

BASSWOOD			
4/4-in.	180	125	78
6/4-in.	190	135	88
8/4-in.	195	145	96

BEECH			
4/4-in.	145	100	63
6/4-in.	160	115	78
8/4-in.	165	120	80

BIRCH			
4/4-in.	265	145	80
6/4-in.	275	160	90
8/4-in.	280	175	100

ROCK ELM			
4/4-in.	135	115	65
6/4-in.	145	125	75
8/4-in.	150	135	80

SOFT ELM			
4/4-in.	125	105	71
6/4-in.	135	115	81
8/4-in.	140	120	86

HARD MAPLE			
4/4-in.	190	130	78
6/4-in.	200	140	81
8/4-in.	205	145	82

SOFT MAPLE			
4/4-in.	165	120	73
6/4-in.	170	130	82
8/4-in.	185	140	90

RED OAK			
4/4-in.	175	125	77
6/4-in.	185	145	82
8/4-in.	195	155	85

*Air dried Northern Hardwoods are no longer available and sales presently being made cover green stock or stock only partially seasoned. Orders are being placed for stock to be cut and shipped green when accumulated.

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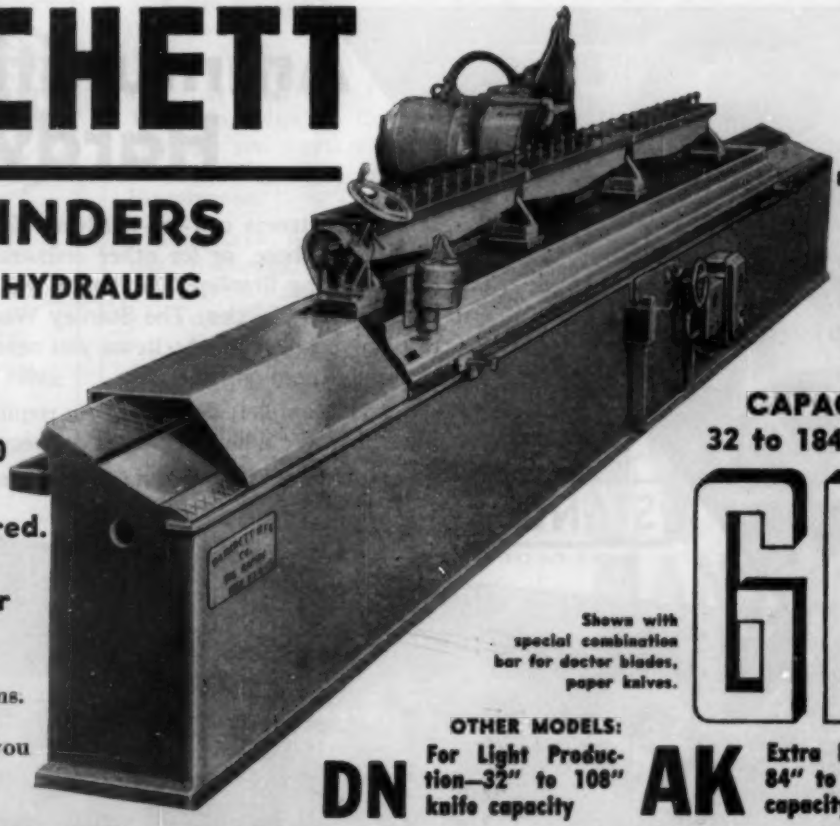

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CAPACITY 32 to 184 inches

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Shown with special combination bar for doctor blades, paper knives.

OTHER MODELS:

DN For Light Production—32" to 108" knife capacity

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NAMES and EVENTS

Personnel Changes

JOHN B. VEACH, president of the National Lumber Manufacturers Association, Washington, D. C., and one of the country's leading lumbermen, has been named forest products consultant to the Munitions Board.

JOSEPH E. DUFFEY, vice-president in charge of production, and A. DOUGLASS HALL, financial vice-president, have been elected to the board of directors of The Diamond Match Co., 122 E. 42nd St., New York 17, N. Y.

CLINTON L. WHITTEMORE, JR., has joined the administrative staff of Olin Industries, Inc., East Alton, Ill., as a special representative on all activities of the company.

MICHEL PASQUIER, assistant to the president of M and M wood Working Co., has resigned to take over ownership, with his brother, of the plant facilities of the William V. Young Co., fabricaters of laminated products at Summer, Wash.

W. S. MUNRO has been appointed plant manager of the Seattle, Washington operation of the Monsanto Chemical Co., St. Louis 4, Mo.

JOHN RUDDY has been named special factory representative, and will operate out of the Los Angeles office of M and M Wood Working Co.

HARRY C. MARTIN, director of research and development, has been elected a vice-president of The Carborundum Co., Niagara Falls, N. Y. FRED W. SCOTT has been appointed manager of the newly established merchandising sales division of the company.

DR. NICHOLAS V. POLETIKA, technologist and research analyst, has been appointed assistant director at the Lumber and Wood Products Laboratory of Timber Engineering Company, affiliate of National Lumber Manufacturers Association, Washington, D. C. He formerly served as manager of the Teco Laboratory. (Dr. Poletika is also co-author of article on marine laminating in the October and November 1952 issues of WOOD AND WOOD PRODUCTS.) ROBERT R. BLUMENSTEIN, former assistant laboratory manager has been named manager, with CHARLES H. HOFFMAN as assistant manager.

Expansions

UNITED STATES PLYWOOD CORP., 55 W. 44th St., New York 18, N. Y., has opened a new and larger sales and distribution unit at 1828 English Ave., Indianapolis, Ind.

FLORIDA ALL-BOUND BOX CO., INC., Auburndale, Fla., is increasing its plant facilities to take care of an anticipated increase in business.

AMERICAN WOOD PRODUCTS CORP., Marion, S. C., subsidiary of The American Box Co., 1900 W. 3rd St., Cleveland, Ohio, has acquired a new veneer mill at Millry, Ala. to increase veneer supplies for stepped-up container production at both plants.

PLASKON DIVISION of Libbey-Owens-Ford Glass Co., Toledo 6, Ohio, has announced the re-establishment of its Cincinnati branch office for coating resins, located at 617 Vine Street, and headed by HENRY C. STUMPE, JR.

REICHHOLD CHEMICALS, INC., has opened a new and modern office and laboratory quarters at its plant in

Ammunition Box Hardware

If your contracts call for hardware for ammunition boxes like that shown here, or for other ordnance equipment—save time by consulting Stanley. The largest manufacturer of hinges and hardware specialities, The Stanley Works has the "know-how" to help you develop the items you need, and the plant facilities to supply them on time.

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south San Francisco, Cal. This completes the third recent major expansion of the company which has 29 plants throughout the world.

Corporation Changes

SKIL CORPORATION is the new name of Skilsaw, Inc., Chicago manufacturer of portable electric and pneumatic tools. The change became effective October 1, 1952.

E. C. ATKINS & CO., Indianapolis, Ind., saw manufacturers for more than a hundred years, has been acquired by the BORG-WARNER CORPORATION of Chicago, Ill. The company will be known as the Atkins Division of the Borg-Warner Corporation.

New Firms

LITTLE CREEK FLOORING CO., INC., has been formed in Harlingen, Texas, with a capital stock of $5,000. Incorporators are: MARJORIE M. GALLAGHER, GEORGE WILLIAM GALLAGHER, and ROBERT J. GALLAGHER.

AMERICAN VISCOE CORP. and the PUDGET SOUND PULP & TIMBER CO., Bellingham, Wash., announce that construction has been started on Alaska's first pulp mill, a $46,000,000 project near Ketchikan. The plant is expected to employ 700 men in logging and manufacturing, and 400 in construction.

SADLO LUMBER & WOOD PRODUCTS, INC., has been formed in Pendleton Township, Niagara County, N. Y. Directors are: PHYLLIS E. COMSTOCK, DOLORES CORRIGAN, and ALBERT J. FITZGIBBONS.

ROCHESTER BOX & LUMBER CO., INC., Rochester, N. Y., is a recently incorporated firm to manufacture wood containers.

LAKE CHARLES LUMBER CO., Lake Charles, La., has been granted a charter of incorporation, listing capital stock of $200,000.

NAPLES LUMBER CO., INC., Naples, N. Y., manufacturing of various kinds of wood products, was recently incorporated with a capital stock of 200 shares. The directors are: Joyce Hanggi, James R. Rood, and George A. Rood, all of Naples.

TRI WOODWORKING CO., INC., has just been incorporated in Ellenville, N. Y., listing capital stock of $20,000. Directors: Ruth O. Dunn, Kathryn A. Schoonmaker, and Lee Goldberg.

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- Glued-Up or Solid

Made to your exact requirements by careful craftsmen, and delivered on schedule.

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409 Oakland St., Brooklyn 22, N. Y.

FOR SALE OR LEASE...

Well-Equipped Woodworking Plant

With substantial tax loss carry-over

This modern and complete woodworking plant is located eight miles southeast of Lenoir, N. C. Since 1950 it has been used by a North Carolina corporation for the manufacture of television cabinets. Principally because of the 1951 slump in TV set sales, the company has accumulated a tax loss carry-over of $187,830.01. Of this amount, $92,039.10 is available to 1955... $56,975.77 to 1956... and $38,815.14 to 1957.

The company owns 3½ acres of land and additional land may be purchased at a reasonable price. The total floor space of 62,000 sq. ft. is electrified throughout and equipped with a sprinkler-system fire protection and dry kiln of 50,000 ft. capacity. For a complete description of machinery and equipment, write for booklet below.

Transportation facilities are good. The plant is served by a siding of the Southern Railway. A number of truck lines provide direct service to the plant, which is located on U. S. Highway 321.

Independent loggers deliver lumber at the plant, without freight charge, at $10 per 1000 ft. under mill or broker prices. Veneers are readily available at adjacent sources at substantially lower prices than in the East or Midwest. Plentiful supply of highly skilled labor for cabinet or fine furniture work. Average wage rate late in 1951 was $1.12 per hour.

This is an attractive opportunity for a television manufacturer who can provide the company with a profitable volume of cabinet business. Or the plant could be expanded to include assembly of TV sets for economical shipment to all points. The plant may also be readily converted, of course, to cabinet, furniture, or related woodworking operations not connected with the television industry.

Write for folder which includes photographs and floor plan, description of machinery and equipment, and detailed information

ALBERT B. ASHFORTH, Inc.
Real Estate
Main Office 12 East 44 St., N.Y. 17
Phone MUrray Hill 2-1100

ture, suffered a $20,000 fire loss August 6, 1952.

PERMA PRODUCTS CO., Chehalis, Wash., manufacturers of machine-grained shakes, sustained a $750,000 loss by fire August 9, 1952.

J. C. STEELE LUMBER CO., West Monroe, La., was completely destroyed by fire September 5, 1952. The only thing saved was the office safe.

DAVIS BROTHERS LUMBER CO., Ansley, La., lost their sawmill by fire August 14, 1952. The company had celebrated its 50th anniversary of doing business at the same site during the latter part of June, 1952.

GROGAN LUMBER CO., Conroe, Texas, suffered a fire that destroyed its planer mill, commissary and lumber August 13, 1952. Damage was estimated at $100,000.

HARDY SANDERS LUMBER CO., Tatum, Texas, sustained a $40,000 fire loss at its sawmill August 16, 1952.

ARTEX MFG. CO., Stamps Ark., a table manufacturing concern, suffered fire damage to its plant estimated at $100,000 September 26, 1952.

MCGINTY-RIGGS LUMBER CO., Elkton, Ore., was completely destroyed by fire recently with an estimated loss of nearly $100,000.

Associations

NATIONAL LUMBER MANUFACTURERS ASSOCIATION, 1319 Eighteenth St., N. W., Washington 6, D. C., will hold its annual meeting at the Shoreham Hotel in that city November 11-15, 1952. JOHN DRUCKENBROD, former Washington correspondent for the International News Service, has been appointed to the public relations department as editor of publications.

SOUTHERN PINE ASSOCIATION; National Bank of Commerce Bldg., New Orleans, La., announced the election of H. C. BERCKES as executive vice-president, and S. P. DEAS as secretary at the recent board of directors meeting.

FOREST FARMERS ASSOCIATION of Valdosta, Ga., announces that its 1953 Southern Forestry Conference will be held in Pensacola, Fla., March 5-6.

NATIONAL HARDWOOD LUMBER ASSOCIATION, 59 E. Van Buren St., Chicago, Ill., at its 55th annual meeting in Boston, Mass., September 22-25, 1952 elected the following officers: HARRY D. GAINES of St. Louis, Mo.,

president; JAMES C. WALSH of Chicago, Ill., first vice-president; T. M. MILLETT of Louisville, Ky., second vice-president; FRANKLIN T. GRIFFIN of Chicago, Ill., third vice-president. At a board of managers meeting JOSEPH L. MULLER of Chicago, Ill. was appointed secretary-manager. WALTER ABENDORTH and ALVIN J. HUSS were two new members elected to the board of directors.

NATIONAL HARDWOOD LUMBER ASSOCIATION has given short courses in hardwood grading and measurement to over 200 men in seven different States since the middle of February, as announced by JOS. MULLER, secretary-manager.

CHARLES M. RUBYN has been named Manager and Secretary of the NORTHERN CALIFORNIA LUMBER OPERATORS ASSOCIATION, replacing TED STAFFLER who resigned recently.

Miscellaneous

E. P. Morris

THE COE MANUFACTURING CO., Painesville, Ohio, manufacturers of veneer machinery, recently held a sales meeting at the home office of the company which was attended by most of the district sales engineers. In addition to E. P. MORRIS, sales manager, the following key men were present: HOWARD PRICE, Hight Point, N. C.; A. M. CONWAY, Portland, Ore., A. S. HOLDEN, Painesville, Ohio; N. C. OEHLING, Jackson, Miss.

REICHHOLD CHEMICALS, INC., 630 Fifth Ave., New York 20, N. Y., announces plans to manufacture and market powdered phenolics for a wide variety of industrial applications, including molding compounds, foundry shell molds and cores, brake linings, grinding wheels and wood waste products.

WEST SIDE LUMBER CO., Corpus Christi, Texas, has started the construction of the first lumber treatment plant in Texas—south of Waco. The new plant will use the wood-life treatment, which protects lumber from moisture, termites, worms and decay.

WEYERHAEUSER TIMBER CO., Tacoma, Wash., has dropped its option on the Oregon Wood Chemical Company's lease of the Springfield, Oregon alcohol plant. It was said by a company spokesman that the costs necessary to make the plant commercially profitable were excessive, but that the action does not indicate the company is not interested in wood chem-

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Carlton Smith Industries

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● From no other source can you obtain such a complete list of Lumber Manufacturers, Concentration Yords, Wholesalers, Retailers, Commission Men, Furniture and other Woodworking factories and almost one hundred other classes of industrial concerns buying Lumber, Veneer, Plywood, etc. in quantity.

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For subscription terms address Department "AA" of the nearer of the offices shown below

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SPEEDS PRODUCTION

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ical production at some future time.

Deaths

CHARLES G. YERKES, president of the Algoma Plywood and Veneer Co., (a subsidiary of the United States Plywood Corp., New York, N. Y.) and a leader in the plywood industry for many years, died at Green Bay, Wis., September 3, 1952 at the age of 63.

MICKEY EDWIN LEE, former head lumber buyer for the Army Engineers died in St. Louis from injuries which he received from an automobile accident.

EDWARD E. AMES, retired chairman of the board, director, vice-president, and director of sales of the General Box Co., 1825 Miner St., Des Plaines, Ill., died September 28, 1952 at the age of 71. Mr. Ames was one of the country's best known figures in the wooden shipping container industry. D. F. HAHN, vice-president and production manager of the company, died suddenly of a heart attack September 23, 1952. Mr. Hahn had spent his entire career in the shipping container industry.

JAMES L. BRIDGE, general manager of the Sound Timber Co., Seattle, Wash., one of the most widely known loggers of the Pacific Northwest, died August 28, 1952.

CARL BERSCH, founder of the Bay City Cabinet Co., Oakland, Cal., died September 10, 1952. He founded his company in 1910 and was active in its operation until six months ago.

WOODICTIONARY

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Yard lumber less than two inches thick and less than eight inches wide.

Step up production
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FINE OAK
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Manufacturers save time and money with Memphis Hardwood's semi-finished Dimension stock. Waste no time. Start work when stock arrives. No Offal to pay freight on.

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Write for catalog and prices.

FESTO WOODWORKING MACHINES

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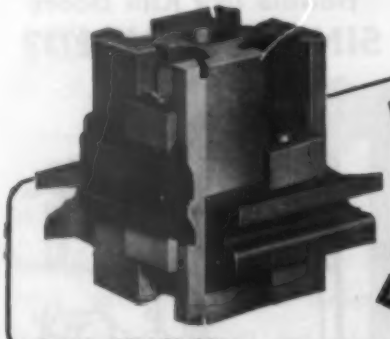

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Wood Puzzlers

This department is designed to help you find an answer to your production and sales problems. Send us the facts. Experience has shown that some other readers can help.

Machine to Cut Bark—No. 70

We are in need of a machine to cut the bark from Poplar logs for our rotary veneer lathe. If you can give us the name of some veneer company that has such a machine, so that we could see it in operation, it will be appreciated very much. In addition, we would like to find a veneer mill that can produce 1/20-inch Poplar X-Bands. (Va.)

Wood Wheels With Rubber Tires—No. 71

Would you supply us with the names of manufacturers who make wood wheels with rubber tires? These would be used in the production of such items as teacarts. (N. C.)

White and Norway Pine Edgings—No. 72

We will have in the near future a supply of White and Norway Pine edgings which we can manufacture

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IS FEATURED IN '52

FOR FURNITURE CABINETS PANELING CASKETS CORES

Our three mills are located in the Mississippi, Atchafalaya and Red River basins of Louisiana which produce the finest Willow in America.

Large and well assorted stocks of this fine willow are ready for immediate mill shipments at all times. We can meet your exact needs, all thicknesses and grades 4/4" to 8/4" or include in mixed cars with Port Barre white ash and other Southern Hardwoods. Prompt attention will be given to all inquiries.

The Port Barre Lumber Industries, Inc.

Manufacturers of Southern Hardwoods

Port Barre, La.

into finished stock of any dimensions, 1-inch to 3 inches wide and up to 16-foot lengths. We are interested in finding a possible market for same. Any help you can give us in this matter will be greatly appreciated. (Minn.)

Knock-Down Boxes—No. 73

I would like to know if you can help me in locating some firms that would let sub-contracts on making knock-down boxes for the defense program or for private business. I have a mill of my own and a source of supply for Aspen lumber, which I understand is about the best type of material for boxes and crates. Any help you can give me will be appreciated very much. (Wis.)

Compressed Saw Dust Blocks for Firewood—No. 74

We have a customer who owns several sawmills. He has considerable waste in saw dust. He has asked us to quote him on equipment suitable for the compressing of the saw dust into blocks that can be used for firewood. Would very much appreciate your giving type of equipment. (Texas)

If you have any problem of wood utilization, or cannot find the kind of material or machine for your particular purpose, SEND IT IN to the editor and we will put it in the WOOD PUZZLERS section.

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HARDWOOD PLYWOOD

Since 1918 the management and supervisory personnel have set high standards for PERMAWOOD. By patient employee training, careful timber selection and use of the finest machinery, we have made a product we are proud to label as PERMAWOOD Hardwood Plywood.

High-frequency Edge-Gluer used in producing finer lumber core for PERMAWOOD Hardwood Plywood.

We make PERMAWOOD panels in standard sizes, all veneer construction from 3/20" to 1-1/16" thick, and in lumber core construction in 3/4" and 13/16" thickness. Widths from 30" to 48"; lengths from 36" to 96". Write for latest stock lists and prices.

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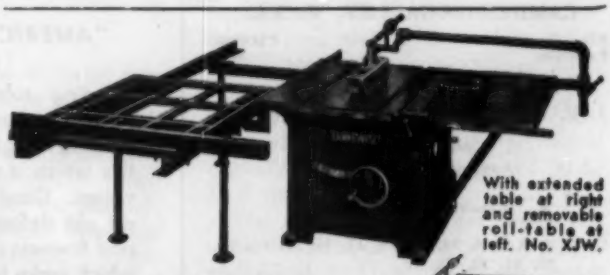

With extended table at right and removable roll-table at left. No. XJW.

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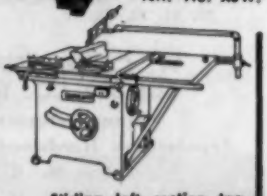
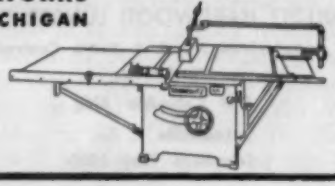


Sliding left section top and extended table at right. No. XJSW.

Standard solid table. (No. XJ) or sliding left section. No. XJS.



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Appalachian hardwood News

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Ely-Thomas Lumber Company

Quality Hardwoods

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Kiln Drying Facilities — Planing Mill

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Appalachian Poplar Booklet

The Appalachian Hardwood Manufacturers, Inc. have just issued their latest trade extension folder entitled "Appalachian Yellow Poplar—The Core Wood Supreme."

Designed for quick and easy reading, the folder explains the physical and mechanical properties that make Appalachian yellow poplar ideal for cores. To remind users of the properties inherent to Appalachian yellow poplar, the folder is being mailed to several thousand furniture and panel manufacturers, the group that comprises the market for core wood.

APPALACHIAN HARDWOODS

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Grading rules separate hardwood lumber into classes according to physical characteristics which determine utility values. Grading rules, however, do not define texture, evenness and fineness of grain—properties which make for ease of kiln drying, working and finishing, and the important economies resulting therefrom. These desirable properties, long recognized and sought by manufacturers of high-grade furniture are a quality bonus imparted by Nature to hardwoods grown in the Appalachian territory.

- *Use of Appalachian hardwood does not mean merely*
- *good furniture made of good material . . .*
- *It means superior furniture made of superior material!*

As assurance of this superiority, use Appalachian hardwoods—"America's Finest"

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VESTAL LUMBER & MFG. CO.

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West Virginia Hardwoods, Inc.

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Kenova, W. Va.
Telephone 2171

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J. WALTER WRIGHT LUMBER COMPANY

Manufacturers & Wholesalers
LUMBER
UNION TRUST BUILDING
BRISTOL, TENN.

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CODE . . .	
1 Bandmill	22 Sycamore
2 Resaw	23 Walnut
3 Circular Mill	24 Others
4 Planing Mill	25 Hemlock
5 Dry Kilns	26 Pine-White
6 Ash	27 Pine-Yellow
7 Basswood	28 Spruce
8 Beech	29 Oak Planking
9 Birch	30 Oak-Car Stock
10 Buckeye	31 Oak-S.S.E.
11 Butternut	32 Oak-Truck Body
12 Chestnut	33 Oak-Timbers
13 Cherry	34 Cross Ties
14 Gum-Black	35 Oak Flooring
15 Hickory	36 Maple Flooring
16 Locust	37 Beech Flooring
17 Maple-Hard	38 Dimension Semi Fin. & Fin.
18 Maple-Soft	39 Dimension Rough
19 Oak-Red	40 Stepping Pl.
20 Oak-white	41 Mouldings
21 Poplar	42 Others

New and Improved Products

Log Scale Computor

Ed Burton, forester for Willits Redwood Products, has developed a new computor which is designed to save time in computing the log scale from the dimensions. A year's test use has shown that it reduces errors and increases the scalers speed and efficiency. The scaler's time per truck of five thousand feet of redwood was reduced by one-fifth, thus reducing the truck waiting time. The Burton Computor is being sold by Fred E. Barnett Co. for $28.00.

The computor has the table printed in porcelain enamel on steel so that it is weather-proof, durable and easily read. In operation, the slide is moved to the log diameter, and the volume is read directly from the number on the table next to the log length number.

Wheel Model Utility Fan

A utility fan on wheels, especially designed for use where its location must be changed frequently, is now in production at the Hartzell Propeller Fan Co., Dept. W, Piqua, Ohio. This Hartzell Wheel Model Utility Fan is mounted on a handled steel rod framework equipped with 15-inch metal wheels. It is cradled so that sufficient weight is borne by the rear supports to prevent "walking," yet permitting even the largest models to be wheeled around without excessive weight on the handles.

Ruggedly constructed, the Hartzell Wheel Model Utility Fan has no "frills" or "gadgets" to cause mechanical troubles. The fan can be turned vertically in a complete circle on its mounting, and locked in any position. It is designed for such uses as kiln cooling, blasting hot spots which vary in location as the machines are operated, and similar cooling requirements which change position frequently. It is available in 24-inch, 32-inch and 36-inch sizes.

New Panel Saw

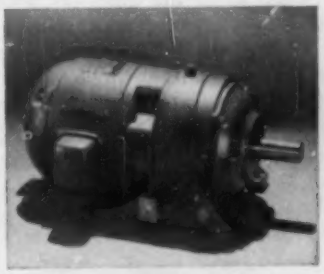
The new Wallace No. 48 Panel Saw requires only one man to operate it. Developed on the "move the saw, not the stock" rule of economy, the unit is made with an inclined bed on which one man can easily place the panel.

An adjustable overhead way supports the carriage which rolls from left to right along a scale to the desired length of cut-off. For ripping, the motor unit rotates 90° and is provided with an adjustable stop to locate the position. It crosscuts up to 48 inches wide, rips to 8 feet long. The machine is also used for dadoing, plowing, and cut-off work on board stock. For complete data, write to J. D. Wallace & Co., Dept. W, 143 S. California Ave., Chicago 12, Ill.

Waterproof Sandpaper

Behr-Manning Corp., Dept. W, Troy, N. Y., Division of Norton Co., announces the development of a new waterproof sandpaper for industrial users—Tufbak Speed-wet Durite Paper. Highlighting the features of Tufbak are freeness of cut and ability to maintain the initial sharp "bite" necessary in wet sanding. An entirely new, extremely tough backing permits maximum flexibility. Its increased body strength resists creasing, cracking and curling.

This combination of toughness and flexibility is said to increase durability, mileage, "hand", and resistance to skidding and peeling of grit. These advantages are obtained whether the sheet is soaked in the usual liquids for a few minutes or for hours.

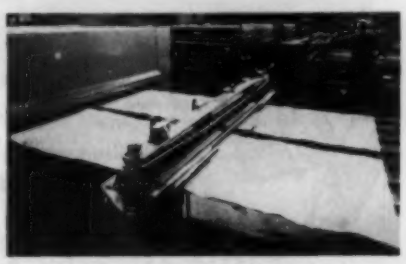


Three-Piece Gear Motor

A new gear motor, designed to simplify maintenance in case of electrical failure of the stator, has been announced by the General Electric Co., Dept. W, Schenectady 5, N. Y.

The new motor is built in three pieces to permit quick and easy removal of defective stators without disturbing gear components or gear connections to the load. Its unique design includes a G-E Tri-Clad motor; a compact, planetary gear; and a mechanical adapter. G-E Tri-Clad motor construction is said to offer extra protection against operating wear and tear, physical damage, and electrical breakdown. The gear, developed last year by G-E engineers, is available in speed ratings of 780 to 13.5 rpm.

The mechanical adapter serves the triple function of acting as the pulley end-shield for the motor, the motor end-shield of the gear housing, and a mechanical spacer for easy accessibility to the stator frame bolts.



Cross-Feed Veneer Splicer

What is said to be an important innovation in veneer splicing technique is offered in this new Fisher Cross-Feed Veneer Splicer just announced by Plycor Co., Dept. W, 565 W. Washington Blvd., Chicago, Ill. This unit will edge-glue veneers as thin as

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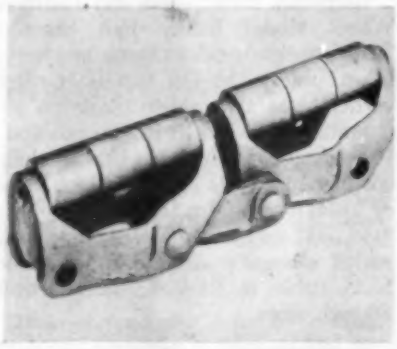
1/32 inch and perform an effective flattening operation at the same time. Consequently it is practical for face veneers as well as for cross banding and center veneers.

In operation, the veneers are prepared in the usual way, preferably on a traveling head veneer jointer. The edges are coated with any one of the special urea resins for veneer-splicing which can be obtained from most glue suppliers. After the glue has become more or less dry, the veneer strips are fed through the splicer with the grain of the wood at right angle to the direction of flow. The veneers emerge as a continuous strip of veneer. A clipper (not a part of the machine) is installed at the outfeed end of the splicer, automatically cutting the veneer to the required width.

Fungus Resistant Varnish

Maas & Waldstein Co., manufacturers of Industrial Finishes, announce the recent approval of one of their synthetic finishes under Military Specification MIL-V-173. The finish, known as Durad Moisture and Fungus Resistant Varnish Y-608, contains 8 percent Salicylanilide and is approved under Type I and Type II of the Military Specification.

A Military Qualified Products List dated May 1, 1952 has been issued approving the use of Durad Moisture and Fungus Resistant Varnish Y-608. Additional information about the application and use of this material may be had by writing to the Maas & Waldstein Co., Dept. W, 438 Riverside Ave., Newark, N. J.



Chain for Lumber Sorting

A new roller top chain for lumber sorting tables and similar applications has been announced by Link-Belt Company, Depart. W, 307 N. Michigan Ave., Chicago 1, Ill. This new triple roller top chain has free-turning rollers which reduce drag and permit heavy timbers to be drawn off easily, one at a time. The short concentric rollers reduce possibility of freezing to the shaft. The chain body is heavy malleable iron, proportioned for maximum strength under heavy loads, with a broad base for stability and adequate load support, and broad bottom wearing surface.

Massive Knife Grinder

The completion of a massive, 12 ton grinder of the 220 Series with a new, hydraulic fluid motor drive has just been announced. The actual purpose to which this particular grinder is to be put cannot be released at this time

turn scrap into profit with

M&M HOGGING EQUIPMENT

Utilize every bit of scrap by turning it into extra dollars with M & M hogging equipment. M & M machines are built in many types and sizes for slabs, edgings, trim, blocks, veneer, bark, and other combustible waste. Send us your scrap problem and we'll show you how M & M hogging equipment can solve it.

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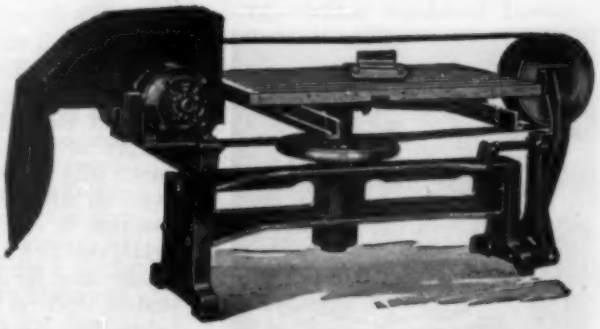
"OLIVER" NO. 298-D

SELF-CONTAINED Belt Sander



for smoothest work . . . a compact Sander with many of the features of our larger machines

For many woodworking plants this "Oliver" Belt Sander will prove a money-maker. Takes small floor space. Sands stock up to 58" long, 26" wide at one setting, and up to 9" high. Table runs on ball bearing rollers with 21-inch travel. Rubber faced aluminum ball bearing pulleys—driving pulley mounted on motor shaft. Dust hood and bag keep work and floor clean. Write for Bulletin 298.

OLIVER MACHINERY CO., GRAND RAPIDS 2, MICH.

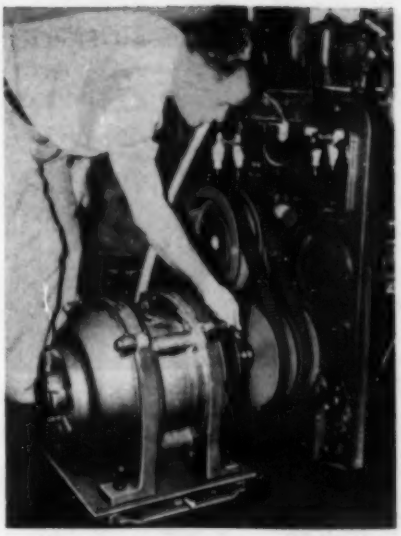
because of security reasons. However, it heralds the arrival of a new type grinder which is available to industry for maintenance or production grinding.

Grinders of this type are particularly adaptable for fast grinding of shear blades, paper, veneer, chipper and other heavy duty knives. It also can be used for flat face, bevel and edge grinding. This new Rogers model weighs 12 tons and its work table measures 184 inches. A magnetic chuck speeds up work loading and unloading time. Even though the work table weighs as much as 4 tons, the new fluid drive moves the work past the grinding head at speeds up to 100 feet per minute. It gains this speed within a foot of starting from a dead stop.

The high speed table makes it possible to remove stock at extraordinary rates. It is claimed that the machine can grind to a .0015 tolerance despite the high work speed. For further information concerning this new grinder, write Samuel C. Rogers and Co., Dept. W. 183-205-Dutton Ave., Buffalo 11, N. Y.

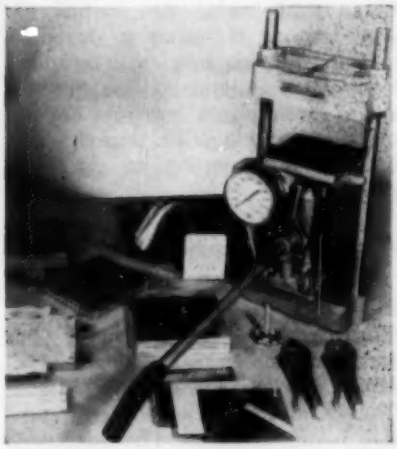
Variable Speed Drive

A new variable speed drive incorporating the Taper-Lock principle has



just been announced by Dodge Manufacturing Corp., Dept. W, of Mishawaka, Indiana. Engineering features in the four units which comprise the new drive cut down-time on speed changes and increase production, according to the manufacturer.

Components of this new Dodge Variable Speed Drive are: (1) a variable pitch motor sheave; (2) a set of wide range belts; (3) a companion sheave; (4) a slide motor base. The Dodge Taper-Lock principle is used in the bushings for both sheaves in the new drive and contributes to the rapidity and ease with which speed changes can be made. The drive is exceedingly compact; the sheaves occupy a minimum space on the shaft. The variable sheave assembly locks on the motor shaft as a unit with the turn of a screw.



Laboratory Press

All-purpose pressure from 0 to 12 tons for laboratory, home workshop or production use is possible with Harco Press Model P-6612. This flexible basic tool, manufactured by Harco

Test these IMPROVED GLOVES for your woodworking operations

Here are 3 newly improved types, by the largest maker of coated-fabric work gloves. Wear 5 to 10 times longer than ordinary work gloves, and are safer. We will gladly recommend and supply free test samples of gloves best fitted to your operations.

Improved NEOX: More flexible and better gripping than the original NEOX (reinforced neoprene). Much tougher and more resistant to solvents and other chemicals than ordinary neoprene coated gloves. Many styles.

Rough Finished Natural Rubber: Ideal for handling lumber, also all slippery materials, wet or dry. Very cut-resistant. Over-all or palm coated.

Hand-Fitting Non-Slip Plastic: Shaped to the hand with wing thumb and pre-flexed fingers. DUROX (reinforced plastic) far outwears leather and other plastics. Fully or palm coated.

Free Test Offer: Employers, send brief description of your operation. We will supply test samples of the most suitable glove, no charge.

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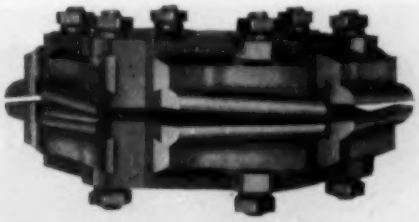
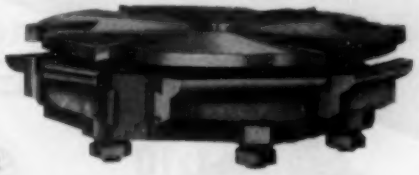


SERIES 212 DOUBLE COPE HEADS

A pair of Series 212 Cope Heads with Milled-To-Pattern bits and a spacer collar to insure constant thickness of tenon. Heads may be used individually.



SERIES 212 COPE HEAD AND GROOVER DISC

A straight edge Groover Disc may be used with a Series 212 Cope Head of the same diameter for cutting bottom rails or check rails. The Series 212 Head will use Milled-To-Pattern bits and the Groover Disc will use Hand Formed bits. A spacer collar is required.

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Industries, Inc., Dept. W, Rochester 5, N. Y., is said to be ideal for embossing, laminating, curing rubber, gluing under pressure, press-fitting parts, experimental plastic dies, duplicating die parts, and as an apple press.

Only 23 inches high, the Harco Laboratory Press requires little operating space. Movable platen is 6 inches x 6 inches with 8 inches between strain rods, with normal die space up to 8 inches in standard model. Additional height can be added if desired. Automatic platen arm moves lower platen into pressure position with single strike, thus eliminating tedious pumping to close die space.

Adapter for Boring Machine

DeWalt Inc., Dept. W, Lancaster, Pa., makers of the radial arm "Power Shop" for small woodworking shops and home hobbyists, announces an inexpensive adapter which converts the "Power Shop" into an efficient, accurate boring machine. The adapter is tapped with a ⅝" hole to screw directly onto the motor arbor, and accommodates boring bits with ½-inch shanks.

The new DeWalt adapter eliminates the necessity of maintaining a separate drill press. When using the conventional vertical drill press type of boring machine the operator is limited in the size of material he can handle to the size of the opening of the throat of the machine. With the motor in position for horizontal boring on the DeWalt "Power Shop", even material of long lengths can be end-bored with ease and accuracy.

Feed for Lumber Harvester

A new ground feed attachment has been announced for the standard Lumber Harvester, manufactured by the Jackson Lumber Harvester Co., Dept. W, Brewton, Ala.

The feed lever is operated by the sawyer standing next to the log ramp, where he can also operate the Dog Board Lever. The man riding the carriage operates the set levers and sets the Dogs. It can be easily removed in less than an hour to allow one-man operation when the sawyer prefers to ride the carriage and operate all levers.

Low-Priced Wood or Metal Saw

Model 47 band saw is announced by the Tomlee Tool & Engineering Co., Dept. W, 718 Washington Avenue North, Minneapolis 1, Minn.

Priced at $89.50, f.o.b. Minneapolis, it is engineered to do everything that saws in the $600 price field will do.

Wapakoneta Knives
ASSURE HIGH SPEED PRODUCTION
BIG CHIEF
The most dependable knife for general purpose high production work.
KNIFE SPECIALISTS SINCE 1891
MOHAWK
Can withstand hard knots in Southern and similar Soft woods
THE WAPAKONETA MACHINE COMPANY
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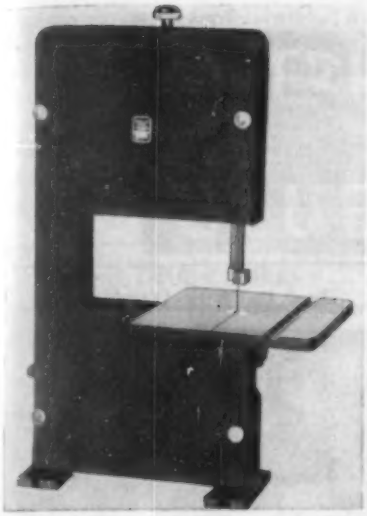


within the limits of its 5¾" throat capacity. In larger machine shops, the band saw is intended as an auxiliary unit so that the big saw can be kept in readiness for big work. A range of speeds will accomodate wood or metal.

A large work table easily tilts to 45° and is grooved to take a mitre gauge for angle or compound cuts. It operates at 4 speeds, and is powered by a ½ HP motor, furnished as an extra. Included with the saw are a set of guides, a ¾ inch blade, and an instruction bulletin.

New Literature

Electric Power Drive Bulletin

A new 20-page catalog of Sterling Electric Power Drives is just off the press for Sterling Electric Motors, Inc., Dept. W, 5401 Anaheim, Telegraph Road, Los Angeles 22, Cal. This well-illustrated catalog contains complete descriptive information on variable speed drives, geared motors and constant normal speed motors in drip-proof, splash-proof, totally enclosed and pipe ventilated designs.

Moulder Service Manual

Dependable Machine Co., Dept. W, Greensboro, N. C., announces the availability of a new service manual for moulders. While written primarily for users of Dependable Electro-Unit Drive Moulders, it is thought that moulder operators in general might like to have a copy because of the wealth of information contained in the manual. The manufacturer believes this to be the most complete service manual ever published for moulders.

Effective Check Design

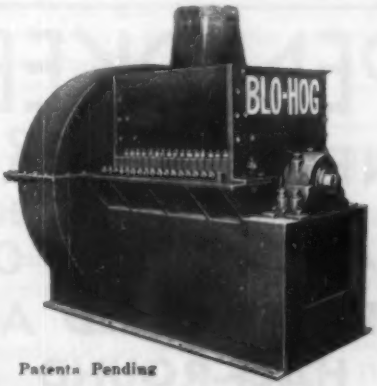
A brochure outlining methods of increasing company prestige and adding advertising impact through effective check design has been prepared for the lumber industry. The brochure, "Change payments into profits with check beauty," incorporates actual samples of outstanding checks in the lumber field.

"Every check you issue is seen by an average of 16 people. Only 50 checks issued per week bring your advertising to 41,600 people per year," the brochure points out. It adds: "You advertise your name, trademark, brand or products under the most favorable psychological conditions - receipt of money." Because each brochure contains actual check samples, it will be made available only to company executives who write on their letterhead for "Check Beauty Folder," Todd Company, Dept. W, P. O. Box 910, Rochester 3, New York.

Fork Truck Manual

A comprehensive manual for use in training lift truck operators is now available to users of fork lift trucks and industrial tractors. The booklet titled "How To Operate A Lift Truck" can be studied individually by the operator or used as a guide by instructors of an operator training school.

The purpose of the 24-page booklet is to obtain a safer and more efficient



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Eats Up Everything

. . . including Pine, Oak, Gum, Hickory, Elm, Wet Veneer Round-up and Sandy Bark.

Conveyor-fed, no attendant is required to "feed the hog."

Sturdy breaker lugs give absolute protection from major damage caused by tramp steel.

Maintenance costs unbelievably low.

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lift truck operation. Using a 2-color cartoon technique with a detailed manual approach, the book contains information on preventive maintenance, safety and basic materials handling and also drawings for setting up an obstacle course. Copies may be secured from Hyster Co., Dept. W, 2902 N. E. Clackamas St., Portland 8, Ore.

Redwood Lumber Drying

A partial answer to one of the most difficult problems in the manufacture and seasoning of redwood lumber is provided in a special report released by the California Redwood Association, Dept. W, 576 Sacramento St., San Francisco 11, Cal. Traditionally a problem child when it comes to drying, redwood normally must be dried in the open air before the job is completed in a kiln.

The spacing of piles of lumber in yards in the Humboldt Bay area was studied to determine the best rate of drying with maximum uniformity. The study showed that a spacing of six feet between piles of lumber "would probably be the most advantageous." Experimentation in air drying techniques will be continued and supplementary information published from time to time, the Association said.

New V-Drive Catalog

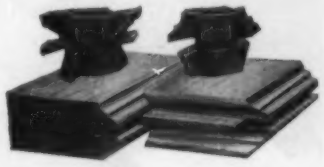
Users of V-Drives will find the new Maurey V-Drive Catalog a useful source of information on fractional horsepower V-Drives and drive parts and accessories. In the range of fractional to 10 horsepower this well illustrated book presents complete listings and data on the Maurey line of bushed type and fixed bore type cast iron and pressed steel V-Pulleys, Mor-Grip V-Belts, refrigeration fans and fan pulleys and V-Drive accessories. Of particular interest are the pages devoted to the Interchangeable Bushings and the Flexible Couplings with a shock-absorbing rubber bond developed by Goodyear engineers. All requests should be addressed to: Catalog Department, Maurey Manufacturing Corp., Dept. W, 2915 South Wabash Ave., Chicago 16, Ill.

Check List for Top Management

A six-page folder (Bulletin No. 117-3) entitled "Today's 25-Point Check List for Top Management" is available from The Harold F. Howard Company, Dept.-W, 1910 Fisher Building, Detroit 2, Mich.

Listed in the folder are 25 questions on factors that have been found to be vital to the continued success of modern industrial firms in today's economy. Typical subjects covered by the questions include cost accounting systems, budget controls, production and quality control, executive training, bonus systems, staff organization, manufacturing methods, development programs and market analysis.

Tool Up With Woodworkers



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Dowel door cutters, Cupboard door cutters, Mitre lock cutters, Glue joint cutters, made of carbon, high speed and carbide tipped.

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PACIFIC NORTHWEST Plywood and Door plant operators are enthusiastic about these new revolutionary portable type Scissors Lifts. All Models can be furnished with a number of different types of controls for your specific job.

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the PERKINS GLUE LINE

PERKINS GLUE COMPANY — Lansdale, Pa. * Kitchener, Ont. * High Point, N. C. * Shawano, Wis.

Perkins Corox liquid ready-for-use vegetable glue is excellent for edge gluing stock to be pressed in a clamp carrier as shown above. Samples of Corox are available to woodworkers.

Single Source For All Types of Glue

A single source for all wood adhesive requirements?

Glue-users — large and small — benefit tremendously when they can obtain all their glue room requirements from a single reliable source. Ordering is simpler, better service is made possible, transportation costs are reduced and other obvious benefits accrue to the glue user when a single source of supply is maintained.

Perkins Glue Company is the only major glue supplier offering the full range of resins, caseins, vegetable and prepared hide glues. This assures an unbiased approach on the company's part in offering you the right glue for a particular job and makes it possible for you to get as many different adhesives as you may need from one source.

The Glue Line

The regular editions of "Perkins Glue Line", external house organ of Perkins Glue Co., have not appeared in recent months for reasons beyond our control.

The publication will appear again in the near future as a quarterly and the several thousand readers on our mailing list will receive each edition.

Glue Powder Storage

Powdered resin or casein glues should never be stored directly on a concrete floor. Moisture from the concrete will considerably shorten the storage life of the resin or casein.

If the storage room floor is concrete, place boards underneath the drums as a precaution.

Fast-Setting Corox Gives Strong Bond In Joint Gluing

Users of Perkins Corox liquid ready-for-use glue report that excellent joints are obtained even after short clamping periods. This excellent prepared form of vegetable glue has received wood fabricator's stamp of approval for a wide variety of gluing applications.

Assembly gluing is the primary place for use of Corox, but large quantities of this glue are also used in edge bonding of corestock. Cores bonded with Corox may later be hot pressed in panel manufacture without a softening of the glue line.

While longer pressure periods are advisable where possible users of Perkins Corox have reported excellent joints after clamping times of as little as ten minutes.

In addition to fast set, Perkins Corox offers an unapproached advantage over other ready-for-use adhesives in that Corox joints get stronger with age rather than weaker as is the case with many other liquid adhesives offering a quick bond.

Perkins Corox—due to the elimination of mixing, heating, and other laborious and costly operations — is considered to be one of the most efficient glues ever offered furniture manufacturers.

Full information and test samples may be obtained from Perkins Glue Company, Lanesdale, Penna.

Founded in 1899

Perkins Glue Company is one of the oldest firms serving furniture and plywood manufacturers. The Company was founded in 1899.

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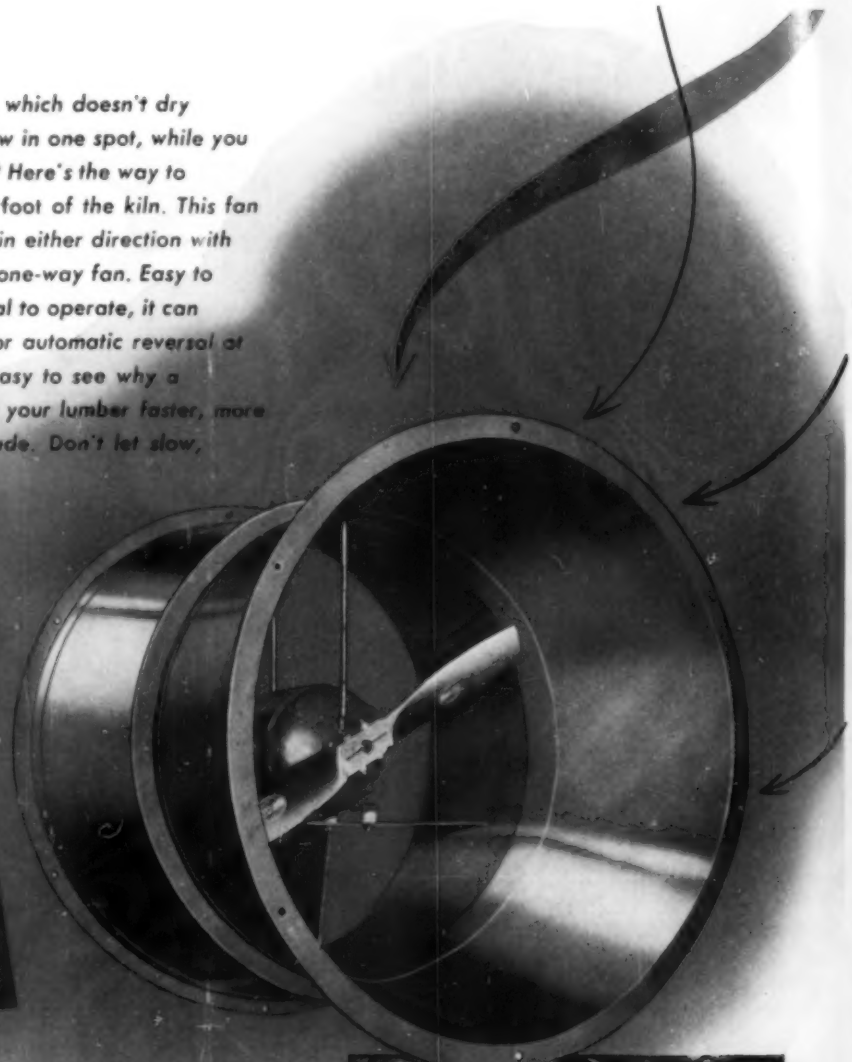
HANDICAPPED *by a kiln which doesn't dry lumber uniformly? Is drying slow in one spot, while you get case-hardening in another? Here's the way to get good drying out of every foot of the kiln. This fan moves the same volume of air in either direction with efficiency unsurpassed by any one-way fan. Easy to install and maintain, economical to operate, it can be reversed manually or set for automatic reversal at pre-determined intervals. It's easy to see why a Hartzell reversible fan can dry your lumber faster, more uniformly, and with less degrade. Don't let slow,*

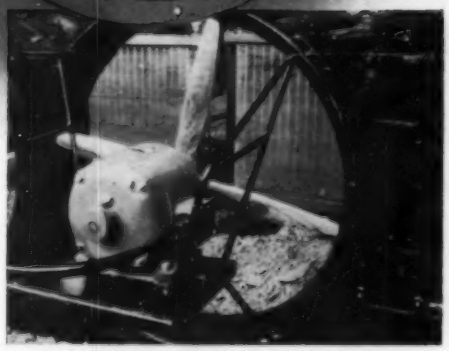


for faster drying with less degrade

HARTZELL

Reversible DRY KILN FAN

inefficient kilns continue to cut your profits. Eliminate losses from case-hardening and incomplete drying. Hartzell engineers, backed by kiln-drying experience since the turn of the century, will prescribe the installation which fits your exact needs. Send the details of your drying problem to Hartzell. Do it today.



Maybe the new reversible fan isn't the answer to your particular kiln-drying problem. Then don't overlook the rest of the Hartzell line, perfected by a half-century of experience in dry-kiln operation. Hartzell equipment and Hartzell "know-how" can help you, whether you plan to build new kilns or modernize your present ones. Used in connection with Hartzell unit heaters, Hartzell fans will give maximum heat and maximum air-movement for steam and power used.

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